

UNIV. OF  
TORONTO  
LIBRARY






BINDING LIST MAR 1 1923







Digitized by the Internet Archive  
in 2008 with funding from  
Microsoft Corporation





# MANUAL TRAINING MAGAZINE

EDITORS

CHARLES A. BENNETT  
WILLIAM T. BAWDEN

ASSISTED BY

WILLIAM E. ROBERTS  
ARTHUR D. DEAN  
FRANK M. LEAVITT



---

VOLUME XXII

1920 - 1921

---

179/82  
4/4/23

Published Monthly by  
THE MANUAL ARTS PRESS

PEORIA, ILL.

# INDEX

Names of contributors of articles are set in SMALL CAPITALS

- BACKUS, ALLEN D.—An Intensive Program for the Manual Arts, 4
- BAILY, JAMES T.—Crafts and Education in British Prisoners-of-War Camps, 383
- BAKER, FRANK A.—Linoleum Block-Printing, 9
- BALDWIN, LELAND DEWITT—Industrial Education in the Philippine Islands, 169
- BEDELL, EARL L.—Household Mechanics in the Detroit Public Schools, 316
- BENNETT, CHARLES A.—The Vocational Schools of Buffalo; Hunting High Points, IV, 91; The Indianapolis Conference, 223; The Minneapolis Convention, 277
- BRYANT, FREDERICK J.—Furniture Fashions of Long Ago, 175
- Cooperation in the Schools—J. J. EATON, 258
- Crafts and Education in British Prisoners-of-War Camps—JAMES T. BAILY, 383
- Current Publications—26, 56, 90, 128, 168, 208, 242, 276, 310, 343, 376, 407
- DANK, MICHAEL C.—Toy-Making in the Schools, 141
- Editorial Review for the Month:—  
Administration of the Smith-Hughes Law, On the, 106; After the Eighth Grade, What? 42; An Investment, not an Expense, 42; Art and Community Betterment in Illinois, 73; Art Training and Community Needs, 191; Better Cities, Contest in Oklahoma, A, 107; Bureau of Education Conferences, The, 260; California Representative, Our, 190; Campaign for School Funds, A Remarkable, 228; Child Labor, An Increase in, 105; Continuation Schools, Effect of, upon the Regular Day Schools, 188; Dazed, 229; Dunwoody Institute to Cooperate with the University of Minnesota, 41; Earn-and-Learn System, The, 229; Educate for the Proper Use of Leisure Hours, 13; Education in the Army, 228; Educational Films in the Future, 294; English Viewpoint, From the, 150; Frederick H. Evans Succeeds Professor R. W. Selvidge in Army Work, 149; Foreman as a Teacher, The, 361; Foreman Training, A Society for, 111; Future of the Sloyd Training School, The, 329; General Education but Different, 261; Grammar Grade Machine Shop Work in Detroit, 109; Industrial Arts Museum Advocated, 40; Industrial Rehabilitation, 40; "Intensive Plan" in Newark, The, 260; Intensive Plan, The, 152; Is it Desirable to Pay Pupils a Wage? 295; Junior Red Cross, Another Opportunity for the, 361; Mid-Western Meeting in Minneapolis, The, 71; Million Dollar Bequest, A, 74; More Shop Experience for Engineering Students, 74; National Society Takes Its Bearings, The, 360; Need of a Professional Attitude, 72; New Director for Federal Board for Vocational Education, 43; New President of the Mid-West Association, The, 330; New York Federation of Labor and the Educational Foundations, The, 147; Newark to Have a New Vocational School Building, 43; Personnel Institute, A, 110; Present Day Tendencies in Education, 189; Presidential Candidate on Education, The, 105; Professor Crawshaw to Leave Wisconsin, 15; Professor Griffith Goes to Wisconsin, 72; Professor McKinney Becomes a Director of Correspondence School Work, 107; Ranken School to Get a Half-Million Dollars, The, 13; Report on Vocational Guidance, 392; Rural Education and the Shortage in Farm Labor, 14; School Community Scholarships, 393; School Funds in California, 296; Shop Teachers for Part-time Classes, 262; Skill and Education in Colonial New England, 187; Smith-Hughes General Industrial School in Ohio, A, 146; Southeastern Representative, A, 263; Spirit of the School Shop, The, 39; 300th Anniversary of America, The, 187; Toy-Making, 146; Twenty-Day Round Table, A, 149; Two Tendencies in Shopwork Instruction, 328; S. J. Vaughn Goes to University of Illinois, 108; Vocational Education and the Progress of Invention, 152; Western Arts Association Convention, 394; What Kind of Metal Working?, 16; Work of the Forest Products Laboratory, 42; E. A. Wreidt Goes to Indiana, 297
- EATON, J. J.—Cooperation in the School, 258
- Educational Situation in Hawaii, The—WILSON H. HENDERSON, 349
- Educational Workshop Management, A New Method of—A. W. PRESTON, 95
- EGAN, JOSEPH B.—Wood Engraving in a Boston School, 36
- English System of Education and Manual Training, The—F. H. KNOWLES, 1
- ERICSON, E. E.—The Readjustment of the Tradesman to the Business of Teaching, 345; A Solution of the "High Cost of Lumber" Problem for High School Carpentry Work, 61; Toy-Making as a Community Project, 138
- ERICKSON, A. A.—Lars Eriksson, Early American Sloyd Teacher, 324
- EVANS, OWEN D.—Vocational Guidance in the Continuation School, 209
- Evening Class for Industrial Men, The—CHARLES H. SAMPSON, 171
- Farm Blacksmithing—JOHN, F. FRIESE, 222
- Farm Shopwork—E. W. LEHMANN, 103
- FRIESE, JOHN F.—Farm Blacksmithing, 222
- Furniture Fashions of Long Ago—FREDERICK J. BRYANT, 175
- HENDERSON, WILSON H.—The Educational Situation in Hawaii, 349
- "High Cost of Lumber" Problem for High School Carpentry Work, A Solution of the—E. E. ERICSON, 61
- High School Manual Training Teacher and His Job, The—JAMES MCKINNEY, 243
- Home Shop as an Extension of School Work, The—WILLIAM J. ROGERS, 381
- Household Mechanics in the Detroit Public Schools—EARL L. BEDELL, 316
- Indianapolis Conference, The—CHARLES A. BENNETT, 223
- Industrial Education in the Philippine Islands—LELAND DEWITT BALDWIN, 169
- Industry is Meeting the Problem of Industrial Education, How—GEORGE E. MEYERS, 27



- In Foreign Countries:—America and Britain, 401; Attendance Increasing in German Polytechnic Schools, 82; Continuation School Difficulties in England, 19; Cost of Education in Great Britain, 337; Day Continuation Schools Opened in London, 303; Dislike the Term "Vocational," 19; Educational Standard of Manual Training Teachers, To Raise, 234; Educational Crisis in England, The, 368; Employers and Education, 80; Evidence of a New Spirit in English Manual Training, 20; Exhibition of School Work in France, An, 20; French Textile School, A, 401; German National Conference on Education, The, 118; Industrial Education Problem in South Africa, 401; Instructional Factories for Ex-Service Men in Great Britain, 400; J. H. Judd Retires, 269; Letters from Dr. Kerschensteiner, 336; London Continuation School Scheme, The, 20; Manual Training Progress in England, 369; More Metalwork in Manual Training, 401; New Training College for Handicraft Teachers, A, 268; Psychological Factors in Industry, The, 268; Rehabilitation of Vocational Education, The, 302; School for Apprentices in a French Automobile Factory, A, 117; Success of Vocational Schools in China, 82; Trade Union Funds to Promote Education, 269; Training in the Glass Industry, 337; Vocational Education in Canada, 303
- Intensive Program for the Manual Arts, An—ALLEN D. BACKUS, 4
- JONES, THOMAS E.—The Relation of Foreman Training to the Educational Problem of a City, 390
- KING, CHARLES A.—New Visions and Their Fulfillment, 311
- KNOWLES, F. H.—English System of Education and Manual Training, The, 1
- Lars Eriksson, Early American Sloyd Teacher—A. A. ERICKSON, 324
- LAWTON, LOUISA H. S.—Suggestive Course in Photography for Eighth Grade, 31
- LEAVITT, FRANK M.—Vocational Education in the Pittsburgh Schools, 377
- LEHMANN, E. W.—Farm Shopwork, 103
- Lettering—CHARLES H. SAMPSON, 220
- Linoleum Block-Printing—FRANK A. BAKER, 9
- McKINNEY, JAMES—The High School Manual Training Teacher and His Job, 243
- Method of Keeping Class Records and Promoting Cooperation Among Vocational School Shops, A Practical—GEORGE A. WILLOUGHBY, 69
- MEYERS, GEORGE E.—How Industry is Meeting the Problem of Industrial Education, 27
- Minneapolis Convention, The—CHARLES A. BENNETT, 277
- Modeling Clay in the Mechanical Drawing Room, The Use of—W. W. STURTEVANT, 356
- New Visions and Their Fulfillment—CHARLES A. KING, 311
- Occupational Training in the Army—JAMES E. SNYDER, 214
- Photographs From Everywhere—144, 326
- Photography for Eighth Grade, Suggestive Course in—LOUISA H. S. LAWTON, 31
- Point of View, A—ARTHUR D. DEAN, 75, 112, 153, 192, 230, 264, 298, 331, 362, 395
- PRESTON, A. W.—A New Method of Educational Workshop Management, 95
- Project Method, An Application of The—J. H. TRYBOM, 129
- Project Teaching of Manual Training—H. F. WHITNEY, 57
- Projects, Problems and Notes:—Aeroplane, The, 306; Ballot Boxes and Voting Booths, 49; Biplane, 271; Blueprints, The Fading of, 89; Cabinet Making, 54; Cabinet Making, Elementary, 49; Carpentry, 84; Carpentry, Elementary, 47; Charring Does not Preserve Wood, 339; Cleaning the Shellac, 25; Cold Chisel that will Stand, The, 161; Color Scale for Tempering Tools, 341; Cost of Materials, Determining, 270; Effect of Oils on Strength of Glues in Plywood, 54; Electrical Construction Problems, 403; End Vise Brace, 164; Finishing Turned Work on the Lathe, 25; Five Different Types of Glue, Comparison of, 338; Footstool, 241; Forging, Problems in, 274, 373, 340; Glove Box, 372; Grey Finish for Oak, 309; Helping Students to Check Their Lumber Bills, 370; How to Distinguish Mahogany and Walnut from Red Gum, 167; Ice Tongs, 306; Identification of Oak Woods, 402; Invalid's Tray and Tub Stand, 271; Lacquer for Copper, 241; Lumber, Conservation of, 22; Machinists' Tool Box, 166; Material for Class Use, Illustrative, 22; May-Poles, Making, 340; Mechanical Drawing Tests, 202; Metalwork, 50, 86, 124; Method of Staining Checker Board, 274; Mill Bill, 206; Mitered Frame Clamping Device, A, 204; Monoplane, The, 159; Picture Stand, 25; Play Ground Apparatus—A Double Slide, 166; Photographic Printing Box, 270; Porch Swing, 371; Poultry House Builders, Suggestions for, 339; Printing Problem, A, 54; Printing Project, A Good, 370; Project in Metalwork, An Elementary, 164; Rocking Chair, 237; Rocking Clown, 204; Science of Driving Nails, The, 402; Screwdriver That Will Stand, The, 236; Shellac Container Pan, 241; Shovel, 306; Soldering Iron, Cleaning the, 89; Surprise Box, 160; Teaching Electrical Work, A Successful Arrangement for, 124; Three-Panel Screen, 206; Three Woodworking Projects, 161; Toy-Making in the Upper Grades, 159; Upholstery Problem, An, 241; Varying the Number of Plies in Plywood, Effect of, 338; Waste Basket, A, 206, 309; Weight of Ebony, 241; When to Heat Wood Before Gluing, 237; Window Seat and Chest, 309; Wiring Structure for Electrical Shops, 50; Wood Fibres, The Length of, 89; Wood-Turning Chuck, A, 127; Wood-Turning Equipment, Good Use of, 339; Woodwork Design, 119; Woodworking Tests, 200; Woodworking, Questions on, 304; Work Shop, Our 22; Zinc for Etching, 89
- "Putting Over" Machine Shop Education in Smith-Hughes Classes—FRANK C. VINCENT, 352
- Readjustment of the Tradesman to the Business of Teaching, The—E. E. ERICSON, 345
- Relation of Foreman Training to the Educational Problem of a City, The—THOMAS E. JONES, 390
- ROGERS, WILLIAM J.—The Home shop as an Extension of School Work, 381
- SAMPSON, CHARLES H.—The Evening Class for Industrial Men, 171; Lettering, 220
- SCHWEICKHARD, DEAN M.—Tea Wagon, 285

- SELVIDGE, R. W.—Teaching a Trade in the Army, 246
- SNYDER, JAMES E.—Occupational Training in the Army, 214
- STEWART, H. H.—Dr. Snedden's New Book—"Vocational Education," 173
- STURTEVANT, W. W.—The Use of Modeling Clay in the Mechanical Drawing Room, 356
- Tea Wagon—DEAN M. SCHWEICKHARD, 285
- Teaching a Trade in the Army—R. W. SELVIDGE, 246
- Teaching of Mechanical Drawing, Changes in the—W. F. WILLARD, 291
- Tools of the Shoe Shop—HARRY E. WOOD, 282
- Toy-Making as a Community Project—E. E. ERICSON, 138
- Toy-Making in the Schools—MICHAEL C. DANK, 141
- TRYBOM, J. H.—An Application of the Project Method, 129
- VINCENT, FRANK C.—"Putting Over" Machine Shops Education in Smith-Hughes Classes, 352
- Vocational Advisement and Counseling, Problems in—LEONARD W. WAHLSTROM, 134
- "Vocational Education"—Dr. Snedden's New Book—H. H. Stewart, 173
- Vocational Education in the Pittsburgh Schools—FRANK M. LEAVITT, 377
- Vocational Guidance in the Continuation School—OWEN D. EVANS, 209
- Vocational Schools of Buffalo, The—Hunting High Points, IV—CHARLES A. BENNETT, 91
- WAHLSTROM, LEONARD W.—Problems in Vocational Advisement and Counseling, 134
- Washington Correspondence:—Advantages of Manual Training Sometimes Emphasized by Omission, 267; Analysis of Government Expenditures, 114; Atlantic City Convention, The, 335; Baltimore Convention, The, 366; Bureau of Education Conference, 334; Bureau of Education Conference of Specialists, 196; Catholic Bureau of Education, 334; Changes at the Federal Board, 156; Citizens Conference a Great Success, 17; Mr. Dodd and the United States Chamber of Commerce, 399; Educational Opportunity, Equalizing, 232; Education to Meet New Tests, 17; Federal Civil Service, Improving Conditions in the, 196; Government and Education, The, 197; Important Section Meetings, 17; Junior Employment Service, The, 194; Manual Arts for Rural and Village Schools, 115; National Education Association, New Home of the, 157; New Education in the Navy, The, 77; New Legislation in Prospect, 398; Next Step in Meeting the National Crisis in Education, The, 44; Retirement Legislation Becomes Effective, 155; Special Conference on Supervision, 365; Teaching the Thing you Like to do Yourself, 301; Ultimate Results that Count, 18
- WHITNEY, H. F.—Project Teaching of Manual Training, 57
- WILLARD, W. F.—Changes in the Teaching of Mechanical Drawing, 291
- WILLOUGHBY, GEORGE A.—A Practical Method of Keeping Class Records and Promoting Cooperation Among Vocational School Shops, 69
- Wood Engraving in a Boston School—JOSEPH B. EGAN, 36
- WOOD, HARRY E.—Tools of the Shoe Shop, 282





## FIELD NOTES

### MASSACHUSETTS NEWS.

THERE has seldom been such an interesting group of students pursuing the teacher training course of the Massachusetts Board of Education as that which is about to complete a twenty weeks' course of instruction. The class personnel includes representatives of the following industries or professions: auto mechanics; machine shop work; printing; carpentry; jig, tool and die making; sheet metal work; electricity; apprentice instruction; industrial and drafting instructors, etc.

One of the students has just passed very successfully the examination necessary for the rank of major in the Field Artillery branch of the Massachusetts State Guard, and has been thus commissioned; another is a graduate engineer from Technology; several are instructors in the schools of Boston and other cities of the state; one has charge of apprentice instruction at the Fore River plant of the Bethlehem Steel Works; another is an executive in one of our largest local motor manufacturing firms, and has already established a system of training of new men in his plant similar to that of the class in which he is a student. These facts are stated to indicate the extent of the influence of this new and intensive type of education which is rapidly assuming such importance both in the industries and in the educational system of so many states. The class referred to is conducted on three nights of each week at the State House, and is under the direction of Edward C. Emerson and Francis L. Bain, directors of the department of manual arts of the Boston School Committee. During many of the stormy nights of our recent severe winter the class had a record of 100% in attendance.

AMONG MANY PLEASANT REACTIONS following the recent convention of the Eastern Arts Association has been the keen interest evidenced in the work of the several departments of the Boston schools, with which a great many people have heretofore been unacquainted.

Quite recently arrangements were perfected whereby an intensive and well-arranged exhibit of some of Boston's prevocational work was displayed prominently in the Boston Public Library for two or three weeks. Several of the library officials have stated voluntarily that this exhibit has created more interest than any other similar

exhibit ever displayed there heretofore. It caused such favorable comment that other departments of the schools have been similarly provided for at the Library, and yet others will have their turn after schools re-open in September. There is no question but that the Convention was responsible for a considerable impetus for industrial arts, and it is also true that prevocational and continuation school work are supplying to a marked degree a long-felt need, for which there has been little or no adequate provision until recently.

A considerable number of the larger cities of this state are establishing continuation schools, in accordance with the terms of the law recently enacted which makes such obligatory under certain conditions, and this insures provision for the continued education of a group of boys and girls, growing larger day by day, whose education would otherwise cease with the issuance of their "working certificate." The present abnormally inflated conditions concerning wages in the industries are responsible for the decimation of a great many classes thruout the state, and practically no effort is too expensive or too elaborate if it will assist in providing some additional education for those who will so sorely need it later, especially after wage conditions resume a normal level, and only those with special qualifications can qualify for the best positions.

ON THURSDAY AFTERNOON, MAY 27TH, the intermediate and prevocational instructors and their correlating academic teachers held an informal reception for those of their number who had been engaged in any type of war activities, the invitation also being extended to members of the Department of Manual Arts of Boston. Pleasing music of an instrumental and vocal nature was furnished for the occasion by those who were present, and this added much to the enjoyment of the affair, which was held at the Normal School.

Interspersed with the musical program were two-minute "talks" by Asst. Superintendent John C. Brodhead and a number of others who had been engaged in various types of war activities, and the reminiscences were greatly enjoyed by the guests.

THE BOSTON MANUAL TRAINING CLUB held its last meeting for the present season at Healey's Hotel on Saturday, May 8th, at 12:15, noon.

*(Continued on p. VIII.)*



FIELD NOTES—(Continued from p. VII.)

Following a very enjoyable luncheon (which was served at an unusually reasonable figure for "these parlous times") President Greener introduced Dwight L. Hoopingarner, lecturer at Harvard University Graduate School of Business Administration, who, during the war, served as employment manager in the Hog Island Ship Yards. Mr. Hoopingarner provided a very interesting and instructive address on "Employment Management", treating the subject exhaustively and yet in an intensive and condensed manner, and those present pronounced the address to be one of the most helpful to which the Club has ever had the pleasure of listening. A careful analysis of Mr. Hoopingarner's speech in its entirety has been prepared for consideration at Harvard by Professor Holmes, and it stresses the following topics for discussion.

I MODERN INDUSTRY—

- a Highly complex, highly organized
- b Which necessitates interdependence
- c Feverish demand for production—
- d Which necessitates massing of labor, and
- e High specialization and standardization, and
- f Great commercial organizations, and
- g vast aggregations of capital

II RESULTS—

- a Division of "classes" from "masses"
  - 1 Large risks and great responsibilities of employer
  - 2 Individual worker a cog in the machine
- b Consequent conflict; mutual suspicion; unrest; strikes

III FROM THE STANDPOINT OF LABOR—

- a Modern industry sacrifices men to things
- b It does not even produce the right things, but only what will sell
- c It breeds conflict
- d It fosters autocratic management
- e It makes labor a commodity, and then even interferes with the working of demand and supply in the labor market
- f It makes the worker dependent on the employer for the chance to live
- g It makes him socially inferior

IV WHAT WOULD GOOD SOCIAL ORGANIZATION DO FOR THE WORKER?—

- a It would give him more chance to think about his work and express his thought. Social life is essentially a life of mental interaction.
- b It would recognize that every normal human being has fundamentally the same psychological traits; instinct, feeling, purpose, reason. It would not ignore these in the worker.
- c It would give him a social environment which would be stimulating and developing. It would not herd laborers together and let their social contact degrade them.
- d It would encourage education and invite progress through education, even if production and profits suffered. It would have faith in education to preserve law and order, not resorting to repression for fear of disorder. Society must grow from inner activity, not under external restraint or compulsion.
- e It would recognize the individual worker as an essential element in the social order. Social progress comes about through the inter lay of social forces and individual reaction to them. The individual worker cannot be ignored as a social unit; nor can the social forces arising among the workers as a class.

V Industry, as an institution which begins to rival state, church and school in control of human lives, must be organized to achieve these human results, as well as to produce goods and sell them.

VI This means giving up the ideal of mere quantity in production, with resulting wealth for those who make and sell most at the greatest advantage. Production must consider (1) whether goods are really needed, (2) how equitably and economically they are distributed, (3) how equitably profits are distributed, (4) what happens to the workers in the process of production and distribution.

VII WHAT DO WORKERS WANT?—

- a A chance to do more than subsist; leisure, education, some social and economic independence

(Continued on p. X.)

# DISSTON

## SAWS AND TOOLS

### Every School Needs the Saw Most Carpenters Use

Many schools train their students with the aid of the Disston Saw. Perhaps the chief reason is because most of these young men will choose the Disston Saw later in following their trade—it's the Saw Most Carpenters Use.

Then, too, a Disston Saw cuts fast and straight for the beginners just as it cuts for the skilled carpenter. This feature makes both teaching and learning rapid and pleasant.

And a Disston Saw stays sharp surprisingly long. That saves time and trouble. So the same Disston qualities that enable the carpenter to do his finest work will aid your students in learning rapidly and correctly.

Write for the Disston booklets on Saws and Tools, for school use—telling how to select, use, and care for Disston Saws and Tools.

## HENRY DISSTON & SONS, INC.

GENERAL OFFICES: PHILADELPHIA, U. S. A.





FIELD NOTES—(Continued from p. VIII.)

- b A share in the responsibilities of management
- c A greater share in the product and profits
- d Improved conditions of work
- e Insurance against unemployment
- f Treatment as a human being, "man to man".

VIII All this requires the development of mutual confidence between employer and worker, based on the education of the worker as to the problems and risks of management and the education of the employer as to the human needs and demands of workers. Legislation cannot do as much as education to prevent conflict and stimulate co-operation. Education is necessary even after laws have been passed. Law and order depend on education.

IX Education which will help to humanize industry in this way cannot be merely technical, nor concerned with the mere machinery of government or of industry itself. It must be an education which reveals human values in their right proportions. It must help all concerned to see what is *worth while in life*. It must go beyond the rudiments and do more than give vocational skill. There is no fixed limit of intelligence below which it is impossible to give the individual a fair view of the values of life.

X Various subjects of the curriculum and various educational activities afford opportunity to develop that *social understanding* which will help most to produce a co-operative spirit. We must endeavor also to devise methods and means for training in *social responsibility*—good leadership and good followership.

After a fruitful discussion of Mr. Hoopin-garner's interesting paper, the president announced an election of officers for the coming year. The Nominating Committee suggested re-election of present officers, which was affirmatively voted on, and the officers for the coming year are as follows: President, George C. Greener; Vice President, Joseph E. Owens; Sec-

retary, Andrew J. Leahy; Treasurer, George F. Hatch; Librarian, Martin L. Olson.

Then followed the election of twenty-two new members, as a result of the Club's Membership Campaign.

MASSACHUSETTS TEACHER TRAINING ACTIVITIES

The Massachusetts Board of Education will conduct a summer course dealing with teacher training problems from July 6th to July 16th, 1920, probably at the Boston Trade School. The following subjects and lecturers are announced:

- I Administration and supervision of Vocational Schools including a study of laws relating to public instruction—  
W. D. Parkinson
- II General Principles and Methods of Teaching and Trade Analysis—  
G. A. Burrigge and M. N. Stratton
- III Essentials of Analysis for Related Courses  
E. M. Longfield
- IV Teaching Methods and Related Work—  
M. N. Stratton
- V Teacher Training—  
M. N. Stratton
- VI Drawing—  
H. L. Jones
- VII English and Mathematics—Professional Improvement Course—  
Thomas A. Carey and others  
—FRANCIS L. BAIN.

AROUND NEW YORK

G OVERNOR SMITH has signed the Lockwood Senate Bill No. 21, which removes the three-year spreading clause from the teachers' salary law. As amended, the law now provides that the salary increases which were granted last year to the teachers of New York City became effective in full on June 1, 1920. In addition, the Lockwood Donoghue Bill has been passed granting increases of 30% to those under \$2,000, 20% to those between \$2,000 and \$4,000, and 10% increase to those above \$4,000. All this means that vocational teachers as well as the regular teachers in New York City are to receive salaries that will attract the best men and women (\$2,000 to \$3,600, and \$6.50 additional for evening services).

Nearly two hundred candidates have applied to the board of examiners to take the examination to be held this month for vocational school licenses and for licenses to teach vocational subjects in the elementary schools.

(Continued on p. XIV.)

# Manual Training Magazine

---

JULY 1920

---

## THE ENGLISH SYSTEM OF EDUCATION AND MANUAL TRAINING

F. H. KNOWLES

Editor of Manual Training, the Official Organ of the National Association  
of Manual Training Teachers in England

EXCHANGE ARTICLE No. 2 <sup>1</sup>

I SAID in my last article that the English system of education was disjointed and lacking in cohesion. This, I think, is uncontested. Of course, owing to the demands made in the new Education Act which I described briefly, and the great extension it has given to the scope of public education, the whole system is being overhauled with a view to its reorganization. This will take many years to accomplish, for it has hardly begun yet, so that we may consider with some profit, I hope, the conditions as they exist today.

Primary education is officially termed *elementary*, but there is a general desire that it should be called primary. The public primary schools of England were evolved out of the old charity schools and so were born with the pauper stigma upon them. Whilst this stigma is fast disappearing, there is still a social gulf between these schools and the preparatory schools, most of which are in private hands.

Every county authority has control of public primary education in rural and smaller urban areas, but in the larger towns and boroughs, it is in the hands of the town or city council who exercise control through the Education Committees. Except in a few of the larger towns, like London, Liverpool, Manchester, Birmingham, Leeds, etc., the entire control of higher education is in the hands of the county education

authority. Thus it will be seen that in a town, say of 40,000 inhabitants, the absolute control of public primary education is in the hands of the town council authority, while the whole of the higher education—secondary, technical and adult—is controlled by the county body. Hence, there has been a lack of unity in policy which has tended to separate primary from secondary education. This has been considerably improved of late years as all secondary schools that receive a government grant are compelled, as a condition of their receiving this grant, to reserve a number of free places—up to about 25 per cent of the number admitted each year—to pupils from the primary schools. These free places are competed for by examination and, where necessary, a maintenance grant is given to help the successful candidates to take advantage of them.

The bulk of the children of this country are educated in the public primary schools. They are now compelled to remain at school until the end of the term in which they reach the age of 14. This has just been made compulsory by a clause in the new Education Act (the first to be put into operation), but previous to this clause becoming operative, most of the children left school at the age of 12 to 13, when their education was supposed to have been completed.

<sup>1</sup> See "How the War Affected English Education," published in February, 1919, number of this Magazine.

### MANUAL TRAINING IN ELEMENTARY SCHOOLS

The subjects included in the curriculum are not definitely laid down. Every normal child must acquire the power of speaking his own language, and reading and writing it, and also some knowledge of arithmetic and measurement. Hygiene and physical training, moral instruction—formal and informal—history, geography, music, drawing, nature study and handicraft are also taught. Besides these subjects the law says that a local authority *may* provide instruction of a practical nature—domestic subjects and manual training—for children over 11 years of age, for which an extra grant is paid. This permissive clause led to what is known here as the centre system of teaching manual training, being set up. A room is provided and equipped in some central position—either at a school or another convenient place—for this purpose. The boys are drawn from the neighboring schools and attend one-half day a week for not less than two hours, during the year. The teacher has entire charge and the number in the class must not exceed 20. In London and some of the larger towns the room is on the school premises and is only used for boys from that particular school. In some towns accommodation is provided for 20, 60 or 80 boys, but there is one teacher for every 20 pupils. In rural areas one class may be made up of boys from two or more small schools, and they are taught by a peripatetic teacher who travels about from centre to centre. A similar arrangement exists for teaching cookery and housewifery; in some cases the same building is used, but, of course, on different days.

Besides this more specialized form of manual training there is a continuously progressive course of handwork taught in most public primary schools from the kindergarten occupations of the infant schools thru weaving, clay and cardboard modeling of the younger scholars and the more advanced

benchwork in wood and metal. Such then is a rough outline of the position and work of the public primary schools.

### MANUAL TRAINING IN SECONDARY SCHOOLS

Further education is provided by the secondary schools, trade schools, junior technical and commercial schools, and by the technical institutes for evening students; but it is not yet compulsory.

Hitherto, the aim of the secondary school has been to provide a general education—based on the curricula of the exclusive public secondary schools such as Eton, Harrow, etc.—which was a preparation for a university career. The percentage of pupils who pass on to a university is very low, altho many pupils of average ability pass the university entrance examination, as this is considered an effective test of the education provided in the secondary schools. This preparation for a university career has led to the almost universal teaching of Latin and Greek in many of the old secondary grammar schools. Of late there has arisen an insistent demand for the teaching of science, and this is being met by the school authorities to an increasing extent.

Manual training in secondary schools is, in the main, not as efficiently taught as in the primary school. Hitherto it has consisted of a carpenter's shop, presided over by a mechanic, where boys are allowed to do pretty much as they please. This is rapidly changing as an increasing number of specialist teachers of woodwork and metalwork are being employed to control the workshops that are becoming more and more a necessary part of all secondary schools. There is one drawback: The size of the classes is not laid down by law as in the primary schools, but is left to the discretion of the headmaster. They include as a rule 25 to 30 boys under one teacher.

In secondary schools the leaving age has hitherto been nominally 16, but statistics for England show that a very large number



leave at 15, and with a view to extending the school age the Government has recently fostered the development of "advanced courses" for pupils to the age of 18.

#### JUNIOR TECHNICAL SCHOOLS

A newer type of school that has come into being during the last decade—the number of which is growing—is the junior technical school, and for commercial training, the junior commercial school.

The junior technical school is for boys from the age of 12 to 16 who will adopt an industrial career. In districts where a particular industry is dominant a bias towards that industry is given to the teaching. Where the industries are general, there is only a general bias towards industrial pursuits. Besides this bias there is given a good sound general education similar to that given in the secondary schools, except that there are no languages other than English taught. In these schools, which it should be understood are not definitely vocational, the workshops are an important part. Of the 30 hours a week devoted to school work, 6 to 8 are spent in the workshops so that really good effective work in manual training is done there. Most of the work is done by hand on hand machines, for it is only in the bigger schools that power is installed. (There are many reasons for this—mainly the war—which has made the obtaining of machinery very difficult and expensive.)

There are a few trade schools in the country which are definitely vocational, but they exist only in the larger towns where

the particular trade which is taught is the dominant local industry.

#### TECHNICAL INSTITUTES

Of the technical institutes there is little to be said. Hitherto they have provided a means of further education in the evening for enterprising pupils whose sole education has been that of the primary school, as well as for others. They have done most valuable work, often up to university standard, and have been an essential part of our scheme of further education. Engineering (mechanical and electrical), building, science, mathematics, commercial and literary subjects have been taught efficiently, considering the bulk of the teachers were engaged during the day in either primary or secondary schools or in other employment.

In many of the larger towns there are technical colleges which provide a full-time day course for those who aspire to the higher posts in industry and commerce, and to such careers as that of civil, electrical and mechanical engineering, but for the general worker there is no provision made.

This, then, is an outline of the system of education in operation in this country, and of the position of manual training. In the immediate future every educational authority will have to prepare a complete scheme for the development of the educational resources of their areas. That manual training will be greatly developed is assured by Section 2 of the Education Act, which lays it down very explicitly that "practical instruction" must form an essential part of any scheme of education.

*I saw on my visit a boy just completing a mahogany dining-table. He had made his own working drawings, ordered his materials, kept accurate account of his costs and his own time, and he surveyed his finished work with pride. I am thinking of that boy's education as for 'life' and not for 'a living.' He was going out into the world contented, self-respecting, competent. Many a boy of his type, held to an abstract and uncongenial course, has become the ringleader of a gang subversive of all school discipline.*

—NATHANIEL HORTON BATCHELDER in "*The Atlantic Monthly*."

## AN INTENSIVE PROGRAM FOR THE MANUAL ARTS

ALLEN D. BACKUS

Supervisor of Manual Training, Newark, New Jersey

THOSE familiar with the history of manual training must have been forcibly impressed with the fact that while the subject has undergone an almost constant development in methods and aim the original time allotment has remained practically unchanged. From the original sloyd system with its ideals of mind training thru the development of the hand, manual training has steadily progressed until today it presents, thru its power to correlate abstract and disassociated facts with projects of real interest as well as to interpret industrial life in a way impossible in the classroom, a method of instruction not to be underestimated. Manual training, in spite of whatever weaknesses it may have, has accomplished much, and has done so in spite of a time allowance which has presented to the teacher of manual training obstacles which might easily have rendered progress impossible. Realizing that where conditions have been favorable manual training has produced desirable results, would it not be reasonable to assume that in those places where it has failed in the judgment of the educational leaders it has been because of the barriers raised before it rather than due to the weakness of the subject itself.

In the majority of places manual training receives from 60 to 90 minutes per week for each class just as it did twenty years ago. Teachers are expected to have as many as twenty different classes per week and get results. Where teachers of other subjects have come into contact with their pupils every day, the manual training teacher has seen his pupils only once each week. Every instructor of manual training knows the discouraged feeling that goes with the meeting of 400 different boys during the week, and then for such

a short time that not only is it impossible to establish any of those invaluable intimate relationships which should exist between teacher and pupil, but to even sense the pupil as an individual. Imagine the obstacles such a condition would present to the obtaining of satisfactory results in the academic subjects.

If manual training has produced results (and it must have done so or long ago it would have been discarded) is it not time that those who are specialists in the manual arts and those who are leaders in the entire educational field get together and make it possible for manual training to accomplish in a full measure the results possible? In the final analysis such results are not only going to mean much for the manual activities, but the other school subjects are going to be immeasurably enriched thru a democratization of all subjects.

In the March issue of the *MANUAL TRAINING MAGAZINE* an intensive scheme of organization was described. Since that article appeared many inquiries have been received as to the actual making of such a program of activities. The time has come when if the manual arts are to produce the results of which they are capable a change from the old type of organization must be effected. It is therefore the purpose of this article to present somewhat in detail a typical program of organization which will allow for intensive instruction in the manual arts as well as in the academic subjects.

It is unnecessary to present arguments to convince the teacher of manual arts of the value of an intensive program. However for those to whom the value of such an organization must be proved, arguments exist almost without limit. It makes little difference whether we are dealing with a mental or motor activity, the endeavor is

to make an impression upon the memory. There are two factors which determine to a large extent the depth of impression made; these are *frequency* and *intensity*. There can be no doubt that the impression

The serious economic loss resulting from the necessary constant review is one of the great faults of the prevailing system. Here the impressions made from week to week are at the most only surface impressions.

TYPICAL SHOP SCHEDULE IN A "UNIT" COMPOSED OF THREE SCHOOLS											
SCHOOL "A"				SCHOOL "B"				SCHOOL "C"			
1 <sup>st</sup> CYCLE	2 <sup>nd</sup> CYCLE	3 <sup>rd</sup> CYCLE	4 <sup>th</sup> CYCLE	1 <sup>st</sup> CYCLE	2 <sup>nd</sup> CYCLE	3 <sup>rd</sup> CYCLE	4 <sup>th</sup> CYCLE	1 <sup>st</sup> CYCLE	2 <sup>nd</sup> CYCLE	3 <sup>rd</sup> CYCLE	4 <sup>th</sup> CYCLE
8 45											
8B	7B'	6A'	6B'	7B'	6B'	8B'					6A'
		9 45			9 45						9 45
		6A <sup>2</sup>	6B <sup>2</sup>		5A						6A <sup>2</sup>
10 15				10 15		10 15					
7B <sup>2</sup>	10 45	5B'	5A'	7B <sup>2</sup>	6B <sup>2</sup>	8B <sup>2</sup>					10 45
11 45											
1 00											
8A	5A			5B'		6A			1 15		
	2 00		1 45		2 00		1 45		5A	5B'	
2 30				5B <sup>2</sup>					2 15		
	7A'		7A'		7A	8A			5A <sup>2</sup>	5B <sup>2</sup>	
3 15											

PROGRAM No. 1

made by five weeks of intensive work in manual training, sewing or cooking makes an impression so deep that even after an elapsed interval of fifteen weeks the apperceptive tendencies are very keen, and little will be required in the way of review to take up the subject, without waste of time or effort, where it was dropped. Men who have taught for several years in the Alternating School Shops where the work is of an intensive nature are unanimous in declaring that even after an interval of 30 weeks following 10 weeks of shopwork the boys, on returning, show almost at once the same degree of skill in tool manipulation which they displayed when last in the shop.

When classes are met daily, reviews are almost entirely done away with, and the resulting time gained allows for a much deeper consideration of subject-matter. Also the mechanics of teaching, including the task of discipline, are greatly simplified. Thus there exists not only intensity from the standpoint of time but from the standpoint of content as well. This of course tends to further deepen the memory impressions made. The saving of time is very noticeable in the school kitchen where a certain part of the time allowed for each lesson must be spent in cleaning the kitchen and utensils, or as it is termed, housekeeping. Domestic science teachers assert that



when classes come to the kitchen only once a week the same emphasis must be given to repeated instructions thruout the entire term, whereas in the case of classes which report daily these housekeeping duties soon

For the purpose of presenting a typical intensive organization I have taken three schools which we will call Schools "A", "B" and "C". This intensification is to be carried on thru the fifth, sixth, seventh

PROGRAM FOR SHOP CLASSES --- SCHOOL "A"																			
FIRST FIVE WEEKS					SECOND FIVE WEEKS					THIRD FIVE WEEKS					FOURTH FIVE WEEKS				
MON TUES WED THURS FRI					MON TUES WED THURS FRI					MON TUES WED THURS FRI					MON TUES WED THURS FRI				
8:45																			
EIGHTH GRADE SECTION B <sup>1</sup>					SEVENTH GRADE SECTION B <sup>1</sup>					SIXTH GRADE SECTION A 9:45					SIXTH GRADE SECTION B				
10:15										SIXTH GRADE SECTION A					SIXTH GRADE SECTION B				
					10:45 NO CLASS														
SEVENTH GRADE SECTION B <sup>2</sup>					FIFTH GRADE SECTION B					FIFTH GRADE SECTION B					FIFTH GRADE SECTION A				
11:45																			
1:00																			
EIGHTH GRADE SECTION A					FIFTH GRADE SECTION A 2:00					SHOP CLOSED INSTRUCTOR IS AT SCHOOL "C"					NO CLASS 1:45				
2:30																			
NO CLASS 3:15					SEVENTH GRADE SECTION A										SEVENTH GRADE SECTION A				

PROGRAM No. 2

become matters of routine, accomplished efficiently in the least possible time with the minimum supervision on the part of the teacher.

All of this means a much greater length of time for the essentials of the subject.

There also results a saving of materials which should not be overlooked. This is very noticeable in the kitchen. Foodstuffs not used one day can often times be kept until the next where they would necessarily have been wasted if the kitchen were to have been closed until the following week. Lessons in the preparing of many dishes which can not be completed in the time allowed for one period can under this plan be put into two without the necessity of review or the duplication of materials.

and eighth grades; each grade having two divisions which are termed A and B, A being the last and B the first half of each grade. The schools used here as examples have the following makeup.

School "A":

- 1 Eight A Class.
- 1 Eight B Class.
- 2 Seven B Classes.
- 2 Seven A Classes.
- 2 Six A Classes.
- 2 Six B Classes
- 2 Five A Classes
- 2 Five B Classes.

A total of 14 grammar grade classes.

School "B":

- 1 Eight A Class.
- 2 Eight B Classes.

- 1 Seven A Class.
- 2 Seven B Classes.
- 2 Six B Classes.
- 1 Six A Classes.
- 1 Five A Class

be taught by the regular teachers under special supervision.

The school year is assumed to be 40 weeks divided into two semesters of 20 weeks each. We will now divide each

PROGRAM FOR GRADE 8-CLASS B- - SCHOOL A-																			
FIRST FIVE WEEKS					SECOND FIVE WEEKS					THIRD FIVE WEEKS					FOURTH FIVE WEEKS				
MON	TUES	WED	THURS	FRI	MON	TUES	WED	THURS	FRI	MON	TUES	WED	THURS	FRI	MON	TUES	WED	THURS	FRI
8:45					9:00					OPENING EXERCISES					9:30				
MANUAL TRAINING FOR THE BOYS					PENMANSHIP					DRAWING					PENMANSHIP				
COOKING SEWING FOR THE GIRLS					MUSIC										MUSIC				
10:15					10:00														
ENGLISH-SPELLING					ENGLISH-SPELLING					ENGLISH-SPELLING					ENGLISH-SPELLING				
11:00																			
ARITHMETIC					ARITHMETIC					ARITHMETIC					ARITHMETIC				
11:45																			
1:00																			
HISTORY					HISTORY					HISTORY					HISTORY				
1:45																			
GEOGRAPHY					GEOGRAPHY					GEOGRAPHY					GEOGRAPHY				
2:30																			
READING-GYM					READING-GYM					READING-GYM					READING-GYM				
3:15																			

PROGRAM No. 3

- 2 Five B Classes.

Total of 12 grammar grade classes.

School "C".

- 2 Six A Classes.
- 1 Six B Class.
- 2 Five A Classes.
- 2 Five B Classes.

Total of 7 grammar grade classes.

The boys in all these grades are to have shopwork. The time allowed is to be 90 minutes in the seventh and eighth grades and 60 minutes in the fifth and sixth grades. The girls are to have sewing when the boys have manual training, except in the Eight A and Seven A grades, in which instances the girls are to have cooking. All manual training and cooking is to be taught by special teachers, while the sewing is to

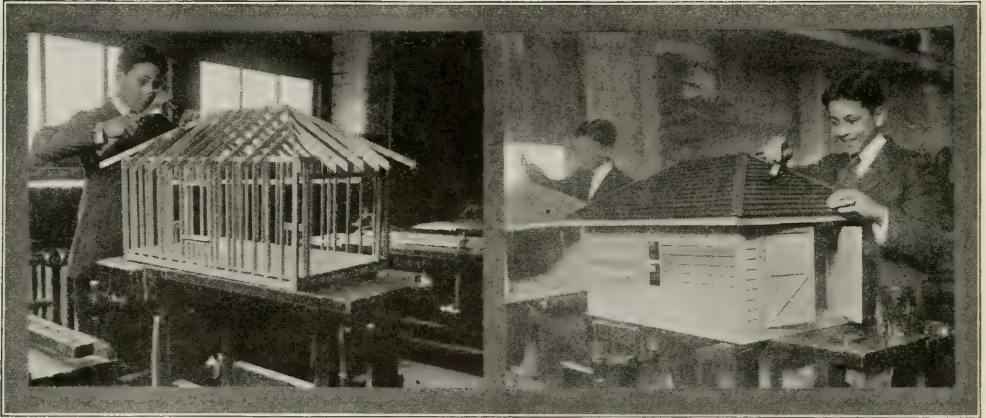
semester into four cycles of five weeks each. The length of these cycles will not be exactly five weeks as it will be best to determine the exact number of days in each semester, subtract all previously scheduled holidays and vacations occurring during this semester, and divide the result by four, thus determining the actual number of days to be allowed each cycle. The exact calendar date for beginning each cycle can now be fixed by counting from the first day of school the number of days allotted to each cycle, skipping each holiday in the reckoning. It will be seen that by this method the loss of time resulting from holidays instead of being borne, as is often the case, by a few unfortunate classes, is here evenly distributed over the entire organization.



It will next be necessary to schedule the manual training, sewing and cooking for all of the schools in the unit. An example of this is seen in Program No. 1. In this instance two instructors of manual training are employed. It will be seen that Instructor "A" is kept busy in School "A" all of the time with the exception of the after-

the entire semester, even with the 75 minute period, as it heretofore received with 90 minutes.

Program No. 2 contains the information that School "A" is now given as a basis for working out its complete schedule for the entire school for the semester. If the school should contain enough classes to be-



THESE PHOTOGRAPHS WERE TAKEN IN THE BURNET SCHOOL, NEWARK, NEW JERSEY, AND SHOW WORK DONE INTENSIVELY UNDER THE DIRECTION OF ARTHUR GIBLIN, INSTRUCTOR. WORK OF A DIVERSIFIED NATURE IS PRACTICAL UNDER THIS PLAN; THE PICTURES WERE TAKEN FOUR WEEKS APART AND SHOW THE BEGINNING AND FINISH OF A PROJECT WHICH WOULD BE IMPOSSIBLE UNDER THE ONCE A WEEK PLAN. SIX SUCH GARAGES WERE MADE IN A CLASS OF EIGHTEEN BOYS.

noons of the third cycle when he is scheduled to have two classes in School "C". Instructor "B" is not occupied at School "B" during the afternoons of the second cycle nor during the forenoons of the fourth cycle, thus affording time for the scheduling of the remaining five classes at School "C". In some instances the time allowances previously stated have been slightly altered. An example of this may be seen in the second cycle of Instructor "A" schedule. In the afternoon 7A is reduced from 90 minutes per lesson to 75. This could be overcome by holding the class in school 15 minutes longer each day during this cycle. It will be evident however that this class will receive as much time during

come a unit in itself a similar shop program must nevertheless be the first step in schedule making.

A typical class program of all subjects extending over the entire semester is shown in Program No. 3. As previously indicated in Programs Nos. 1 and 2 the manual training and sewing must arbitrarily be placed at the time indicated during the first cycle. In the second cycle penmanship and music receive one-half of the time to be given them during the entire semester. With these subjects it seems wisest to reduce the length of the time when actual instruction is not given. It must not be forgotten that the application of penmanship goes on thruout the entire semes-

ter in the written work of the other subjects, as does also the application of music in the assembly singing. Drawing in this grade is programmed as the special activity in the third cycle.

Where physical training is given to all pupils in a gymnasium these periods should next be scheduled, after which the arranging of the remaining subjects is a matter of course.

The fact that it is necessary to schedule the special activities before the other subjects can be placed in the program does not indicate for a moment that such is the case because of their greater importance. This point is mentioned here because of the criticism which has been heard relative to the constructing of a program around the manual arts. Such is true only in a physical sense and cannot be otherwise.

In the schools used in describing this plan the academic work is carried on according to the departmental plan. Each regular teacher has only two or three subjects to teach. It is desirable where possible to give the teachers part of the work of one academic subject and one special activity. For example, the teacher in

charge of the home room of the class whose program is shown in Program No. 3 teaches only arithmetic and drawing. If the school where this plan is to be tried should not be organized on the departmental plan the task will be greatly simplified. When once the program for a certain school has been worked out there is no reason why it can not be used for a considerable time.

Wherever this plan is tried it is highly essential that the program for the entire semester, as shown in Program No. 3, be carefully worked out before the first day of school. The making of programs as each cycle approaches is far from satisfactory and will do much to destroy the efficiency of the plan.

An intensive type of organization can be adapted to any school or number of schools if sufficient time and effort is given to the work. Mistakes will at first be made but time and experience will correct these until the new program will be as free from defects as was the old and will give to the manual arts a chance to prove themselves under favorable conditions instead of against unfair odds.

## LINOLEUM BLOCK-PRINTING

FRANK A. BAKER

Instructor of Printing, High School  
Montclair, New Jersey

IN THE older days when book-making was first invented type was cut with a definiteness of form, with character in every shape, and the printing of pages was done with a strength that was equal to any printed since that time. The secret of this is in the fact that each book was largely the individual art expression of one man. The only hope of art continuing in the books of today is that with the many individuals and units involved in the book they may be united by one guide—practical, sensible art.

If one becomes interested in some form of print-making he will find that his sympathies for the printing craft will be developed. His knowledge of color limitations and the details and possibilities in printing will be acquired in this as in no other way.

Block-printing in its many forms, is the revival of an ancient art. According to the best authorities, we find that the Chinese were the originators of block-printing, and that in the second half of the fourteenth century it made its appearance in Europe. With due credit to John Guten-

burg or L. Janzoon Coster for the invention of printing from movable type, we can safely conclude that printing really dates back to the time of printing from wooden blocks. Today with many schools equipped with print shops, block-printing imparts a new interest to the work of the printing class and also to the art department, because of its illustrative possibilities.

In making linoleum blocks for printing, select from the stock of the dealer in floor coverings, a linoleum with a smooth sur-

face and one with a rough surface, because some designs look better if the grain of the linoleum shows in the print.



BLOCK-PRINTED POSTER BY HIGH SCHOOL STUDENTS

Care should be taken to protect the surface of the linoleum from scratches and dents.

In transferring the design to the linoleum, the original drawing is traced on a sheet of transparent paper, which is reversed, and with a sheet of carbon paper traced on the top of the linoleum. The paper may be fastened to the linoleum with thumb tacks to prevent it from moving while the tracing is being done.

The hektograph method is a very successful method of transfer. The lines of the original design are first gone over with the hektograph ink. As it takes a number of hours for the hektograph ink to dry on the tracing paper, there is usually ample



BLOCK-PRINTED POSTER BY HIGH SCHOOL STUDENTS

face and one with a rough surface, because some designs look better if the grain of the linoleum shows in the print.

Select a pine block, plane and trim it to the dimensions of the design, make allowance for the thickness of the linoleum, so that the block with the linoleum glued on it will be type high or 11-12 in. After





A PROOF FROM EACH OF THE BLOCKS OF A FIVE-COLOR PRINT.  
ALSO A PROOF OF THE COMPLETE PRINT

time to trace a large design, and transfer it to the linoleum block before it is dry. Place the inky side down on the linoleum; lay a damp piece of blotter paper on the tracing; and apply strong pressure, using clamps, or some of the present methods of pressure. In a few minutes the tracing may be removed, and the block is ready to be carved. An excellent transfer can be obtained without the use of the tracing material.

When printing in colors from linoleum blocks, a separate block is required for each color in the design, as shown by the page of illustrations. Thru the use of the method explained below an almost perfect register may be obtained in the printing of many colors:

First, a key block should be carved. After this has been done it may be locked up for the platten press, and a good sharp impression taken on the tympon on the press. It should then be inspected, and any alterations or corrections made at that time. If no corrections are to be made, and if one wishes to make the print in two colors, prepare a second block in the same way as the first one. Lock up the unused linoleum block; then remove the rollers from the

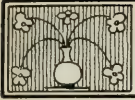
press, and take the impression from the tympon on the linoleum. With this impression on the linoleum it will serve to act as a guide for the next color or colors. If several colors are to be printed the successive block may be treated in this way. With care in cutting, one will receive a very good register. In the printing of the colors, the key color block may be set for position on the sheet, then the lighter colors printed first. In this way one can cover up the ragged edges if there are any. By adhering to this method of registering the several printings, by exercising judgment in selecting the texture of the linoleum, and by varying the color schemes there are amazing possibilities in linoleum block-printing. The illustration of the girl picture, was printed in the following colors; gray, flesh, brown, red, and black.

How important then that the art student, art teacher, and the artist grasp the opportunity to bridge the gap that exists between the artist and the artisan-printer!

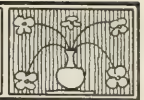
The following tools will be found very useful in the cutting of the linoleum block: Sloyd knife, wood-carver's veining tools, chisels and gauges of various sizes.



CEMENT LAWN PEDESTALS AND FLOWER POTS MADE BY MANUAL TRAINING CLASS,  
PAWNEE TOWNSHIP HIGH SCHOOL, ILLINOIS, WALTER C. SUFT,  
PRINCIPAL AND DIRECTOR OF MANUAL TRAINING



## EDITORIAL REVIEW FOR THE MONTH



### EDUCATE FOR THE PROPER USE OF LEISURE HOURS

ACCORDING to newspaper reports a large committee of the National Economic League has taken a vote on eleven educational questions of which the following are two: (a) Should vocational education be provided in all school systems for pupils 14 years of age and older? To this 68 answered, "Yes", and 12 "No", (b) Should all schools, whether avowedly vocational or not aim to prepare students for the proper use and enjoyment of their leisure in addition to training them for their responsibilities as workers and as citizens? To this 89 voted "Yes" and only 2 voted "No."

The vote on (b) seems to us to be significant because in the first place, the vote on (a) indicates that most of the members were in favor of vocational education, and in the second place, because the committee was made up of university presidents, professors of education, educational administrative officers and others who see the problem of vocational education in its relation to the great social and National issues of the day. Vocation, citizenship, leisure: A few enthusiasts on vocational education have seen the need of training for occupation to be so great—so vital, as they have thought, to our National prosperity—that they have forgotten everything but training for a particular job. The great majority who are engaged in vocational education, we are very sure, have insisted on education for citizenship as well as for a job, and the war has made them recognize that citizenship must be first. Comparatively few advocates of vocational education have said much about education for leisure. Some may have looked upon it as being included in education for citizenship. Others may have drawn a sharp line be-

tween cultural education and vocational education, relegating all cultural education to the elementary school, or at least to the schooling before vocational education begins. As training for the right use and enjoyment of leisure would fall to the cultural division of education, it would therefore belong to the lower school. Still others may have said, "The schools can't do everything for everybody. We must draw the line somewhere." In this way they avoid the issue.

Returning to the vote of the committee, can any thoughtful person read the signs of the times as they appear in shortened hours for labor, in lavish expenditures of larger incomes, and in the conclusions of social workers, and not realize that in its proper proportion the school—even the vocational school—must educate for the leisure hour as well as the work hour? But in what shall this consist? It would be helpful to have the answer to this question from the 89 members who voted, "Yes." Is it another subject—old or new, physical training or literature or art or foreign language or religion—to be added to the curriculum? Or is it making every subject so vitally interesting that a desire to get more of it will carry over from the school to the leisure hours after the school days are over? Or is it both? Perhaps here is another problem for the vocational school to solve.

### THE RANKEN SCHOOL TO GET A HALF-MILLION DOLLARS

A LETTER from Lewis Gustafson, superintendent of the David Ranken, Jr. School of Mechanical Trades, announces a recent gift of approximately \$500,000 to the Ranken School. This comes thru the will of Eli H. Larkin who died on April 16th. Mr. Larkin was vice-president of the National Ammonia Com-



pany of St. Louis and technical superintendent of the St. Louis factory of that Company. The following quotation from Mr. Gustafson's letter gives the important facts:

While the use of this sum and of the income from it is left entirely to the discretion of the Trustees of the School, Mr. Larkin expressed the preference that the sum be set aside, separate and apart from the endowment and other funds of the School, to be known and designated as the "Larkin Foundation," and that the income be used, so far as they see fit, in the following directions:

(1) The work of instruction in power plant operation, in refrigeration, in heating and ventilating, and in cognate and similar subjects.

(2) The establishment and maintenance of lecture courses in technical and other subjects suited to the needs and welfare of boys and men either engaged or preparing to engage in the work of mechanical and manual trades or occupations.

(3) The financial relief or assistance, either through gift or loan, of students who for reasons satisfactory to the Trustees, may be unable to prosecute their studies or work at the school without such assistance, and who may be regarded by the Trustees as desirable students.

In his desire to give the Trustees a free hand, Mr. Larkin stated that the foregoing expression of his wishes "shall not be construed or held to preclude the use by the Trustees of the principal fund, or any part thereof, for building purposes in connection with the School, or for any purposes which, in the unanimous judgment of all the Trustees at the time, may be determined to be of greater or more permanent benefit to the School than the preservation of the trust fund intact and the use only of the income accruing therefrom." It will probably be a year before the estate is closed and the School comes into possession of this new bequest.

#### RURAL EDUCATION AND THE SHORTAGE IN FARM LABOR

THE present shortage of farm labor and the new project method of teaching may work together to bring about some important changes in the rural schools. A discussion is going on in Ohio that will interest other sections of the country. Pro-

fessor C. S. Van Deusen of the Kent State Normal College has proposed two plans for doing away with a one-room school—where a teacher is required to teach eight grades during a given day or week—without constructing new buildings. The first of these is to accomplish the desired result thru the cooperation of schools in pairs. One school would take only children of the four lower grades, and the neighboring school only children of the four upper grades. The second plan involves only one district. It is to give intense schooling to the children of the first four grades during the six months which include the summer, and home-directed work during the other six months. For the four upper grades the periods would be reversed, thus releasing the upper grade children for farm work when they are most needed. As part of the home-directed work, or possibly in place of it, the upper grade pupils might be required to spend their Saturdays at the school building, the forenoons being devoted to class work and the afternoons to athletics, social activities, etc.

Cooperation between consolidated rural and city high schools has been suggested by Professor Van Deusen to bring about similar results with high school students in certain communities. It is proposed that the city high school carry on its usual four-year course of nine months' schooling a year, and that all students in the consolidated high school desiring to pursue such a course be transferred to the city high school. The consolidated high school would give a five-year course of six months' schooling with directed home work during the other six months. If this plan were adopted it is believed that some pupils would be transferred both ways—perhaps the larger number to the consolidated rural high school.

Dean Vivian, president of the Ohio State Board of Education, has stated that he is satisfied that a six-months' high school course with directed home projects would

best fit the needs of the country boy and girl. With the right kind of teachers in the schools he believes the pupils would cover as much ground by such a scheme as they do now in the nine months' attendance at the schoolhouse.

The principal difficulty in the plan seems to be one of getting state school officials in



PROFESSOR EDWIN A. LEE, OF INDIANA UNIVERSITY, RECENTLY ELECTED PRESIDENT OF THE VOCATIONAL EDUCATION ASSOCIATION OF THE MIDDLE WEST.

the right frame of mind to recognize such a six-months' school as a "first grade high school." It may be another case of being so bound by tradition and formalities that equivalent values cannot be recognized.

Everybody will agree to the fact that the service of the boys is greatly needed on the farms at the present time, and is likely to be every year. Educators who believe in mixing real work and real study in the education of young folks will see at once in this plan an opportunity for solid and effective educational work if properly organized and administered. The "old-timer" who constantly harks back to his boyhood days when boys had to work, and were "lucky if they

got six months' schoolin'," may perhaps be justified in the illusion that the wheels of time are turning backward. And the man who believes that farm life in the future is going to call forth the best in a man, and his wife also, that it is going to be more interesting and financially more profitable than life in the city, will look upon this proposed new education for the farmer (for such a change would be sufficiently revolutionary to be called "new" in many communities) as a means of holding boys and girls to the rural life instead of being a means of diverting them to the cities.

#### PROFESSOR CRAWSHAW TO LEAVE WISCONSIN

AT THE end of the summer session Professor Fred D. Crawshaw will leave the University of Wisconsin to enter the life insurance business. He will be connected with the Aetna Life Insurance Co. in an important relation to the Western General Agency, Keene and Hoagland, managers, located at Peoria, Ill. This change is not being made because of any discontent at the University. In fact, Mr. Crawshaw has repeatedly made it clear that quite the opposite is true. This change is made at the result of a growing interest in life insurance as a vocation, a belief that it is one of the greatest avenues for public service, and especially on account of his long friendship with John E. Keene, who is the dean of the life insurance men of the Middle West, having been in the business for thirty-six years. For several years Mr. Crawshaw has been thinking of the possibility of entering the insurance business, should an unusual opportunity present itself. Mr. Keene has evidently been able to convince Mr. Crawshaw that such an opportunity is now open to him, in spite of the fact that new opportunities for larger service and increased salary have been opened to him at the University of Wisconsin.

This change is typical of the inroads that business is making upon the teaching profession this year, except that most of the men leaving the manual arts field have been from lower positions, and so their dropping out does not affect many others in the profession. But when a man leaves one of the three or four most important university positions in the country, his action becomes a matter of general concern.

Professor Crawshaw's consistent and rapid progress from a position as teacher of manual training in Minneapolis in 1897 to the head of the Department of Manual Arts at the University of Wisconsin is too well known to need more than mere mention here. From Minneapolis he went to Bradley Polytechnic Institute as first assistant in manual arts; later he became principal of the Franklin School, Peoria; then assistant dean in the College of Engineering at the University of Illinois; and from there he went to Wisconsin. During the war he was called back to Illinois to take charge of one of the United States Army ground schools for the training of pilots, observers and bombers. He organized the manual arts department at the University of Wisconsin and has been its only head. The uncommon but most logical recognition of the manual arts in university work that has taken place at Wisconsin in the past few years is due primarily to the efforts of Professor Crawshaw.

#### WHAT KIND OF METAL WORKING?

**L**AST month in this column we asked several questions concerning metal-working courses and equipment for pre-vocational and junior high school classes with a view to stimulating discussion of this very timely subject. One of these questions was, "Is it not possible that we could postpone planing and screw-cutting on the lathe? In place of planing we would do

more filing and rough grinding; in place of screw-cutting on the lathe we would use taps and dies. This would eliminate all the most expensive tools. We might want to add a small hand forge or two. Of course, a compromise would be to keep the shaper and one engine lathe. But with the minimum equipment suggested here, is it not possible to carry on a rich course in metalworking, especially suited to boys from 13 to 15 years of age, including automobile repair work?"

We are glad to receive the following reply to this question from Edward C. Emerson of Boston:

You suggest benchwork to take the place of machine work. There is no doubt but what this can be made absorbing and interesting, but there is also no doubt that the limited number of operations make constant repetition necessary, and tends to a quick falling into a reflex habit, with consequent loss of educational content. Moreover, there is no question but that it is more difficult to hold the boys' interest on work of this kind. The boys like to see the "wheels go 'round." They like to feel the thrill of the power necessary to move the machine. They like to feel that they personally, are capable of controlling the power which they recognize is greater than their own muscular strength. All this tends to hold and sustain the interest, and I feel that the results justify any expense which may be incurred up to a reasonable limit.

You mention automobile repair work. That is, of course, interesting and absorbing to most boys, but it is far more difficult to administer than the other work that has been mentioned in your article. While the expenses for machine tools would be less, the expense for housing would be greater, as no effective work in automobile repairing can be done without at least one old automobile chassis to work upon; and it would be extremely desirable to have a place where a car or two might be run in for overhauling. May I say that I would think that this is an occupation which might better be kept for a high school course?

We will be glad to receive more similar contributions to the discussion of this question.  
—C. A. B.



## WASHINGTON CORRESPONDENCE

### CITIZENS CONFERENCE A GREAT SUCCESS

THE National Citizens Conference on Education, held in Washington, May 19 to 21 at the call of the Commissioner of Education, was a great success in every way. Official representatives were in attendance from the Hawaiian Islands, the Philippine Islands, Porto Rico, and all of the states except four. That it was indeed a citizens' conference is shown by an analysis of the registration, which, tho not complete, included 525 names. Of these, 266, or more than one-third, were not educators, but representatives of civic and commercial organizations, womens' clubs, farmers' organizations, labor unions, editors, and official delegates appointed by the Governors.

The climax of the conference was reached at the Thursday morning general session in Keith's Theatre, at which Governor William L. Harding of Iowa presided. In his opening address he indicated certain respects in which education has failed to keep abreast of developments in other phases of American life. He insisted that a new vision and an enlarged conception of education must prevail, and that the new education must be "sold" to the American people. "The country school must be made so fine a place that everybody—man, woman and child—will want to go to it, and pay real money to keep it going," and "the state and nation must somehow see to it that every boy and girl in the land has a chance to get an equally good education."

### EDUCATION TO MEET NEW TESTS

DR. ALBERT SHAW, editor of the *Review of Reviews*, spoke next on "Meeting new tests of rural and urban life." He said it is necessary to admit the force of the statement of the President's Industrial Conference that "this (the school) situation is a *national menace*."

He maintained that what is needed is the adoption of a "bold policy that must be as definite and as fundamental as the policy adopted three years ago when the country entered upon the war." The present menace, while of a different kind, is just as threatening as the one which confronted us then. "It was a national menace then; it is a national menace now, and calls, in some degree, at least, for a national remedy."

State superintendent Thomas E. Finegan, of Pennsylvania, in advocating "a practical program for the development of the rural school," showed how far the states have lagged behind the American ideal of equal educational opportunity for all boys and girls. "An adequate program of public education" was discussed by Dr. Frank E. Spaulding, formerly superintendent of public schools of Cleveland, Ohio, and now director of the department of education in Yale University, who declared that the schools have been on the defensive long enough, without results, and that they must now assume a vigorous offensive. The nation must immediately embark on a program of education calling for expenditures several times as great as those which now prevail.

The final address on this program was on "Economies in education," by Dr. Charles H. Judd, of the University of Chicago, who pointed out a number of important ways in which the schools may accomplish more than they are now doing with existing expenditures.

### IMPORTANT SECTION MEETINGS

I WISH I could give some account of the other general sessions, but I may not take the space. It is worthy of note that of the 25 speakers scheduled for the five general sessions, only nine were educa-

tors, while the remainder represented various civic, social, industrial and political interests.

An important feature of the conference was the section meetings, in which the delegates were distributed according to their special interests and responsibilities into groups for the discussion of the following topics: (1) State departments of education; (2) City school problems; (3) Preparation of teachers; (4) Other forms of higher education; (5) The press. Each of these Sections held three meetings, Wednesday morning and afternoon, and Thursday afternoon. Committees were appointed to draft statements of policy, which were later submitted to a general committee on resolutions. On Friday afternoon four section meetings were arranged on a slightly different basis, as follows: (1) The appeal to the people; (2) Health education; (3) Educational extension, Americanization, illiteracy; (4) Salaries and revenues.

The primary purpose of these section meetings, for which only skeleton programs were arranged in advance, was to stimulate free and open discussion on the part of the delegates. The signal success of this feature of the conference should be noted by program makers, who too often provide a surplus of speakers and formal discus-

sion, and thus frequently fail to realize the full potential results of a gathering of interested persons.

#### ULTIMATE RESULTS THAT COUNT

THE final test of a national conference of this kind, of course, is to be found in its tangible effects on the people and on the schools. Already the prospect of significant results is bright. The states of North Carolina and North Dakota have already held State Citizens Conferences on Education, at which the foundations were laid for vigorous campaigns for the improvement of schools. About the middle of June two state conferences are to be held in Oklahoma, at which a definite program to the same end is to be launched. Other states are considering similar measures, and the Commissioner of Education is planning to cooperate and assist in every possible way.

There is much evidence upon which to base a prophecy that there are distinctly better times ahead for the schools, and that in the not distant future, provided they measure up to their opportunities for service. All classes of citizens are becoming aroused, and there is evident a desire to know what must be done. There is, or soon will be, something for every reader of this MAGAZINE to do. —W. T. B.

*Let no one conclude that vocational education neglects to consider that boys and girls may wisely change their minds after once having positively chosen a vocation and having made preparation to put the first choice into effect. There is necessarily some loss in any change of mind. Such preparation is not wholly lost however. What was intended as vocational may serve well as prevocational.*

—W. T. CARRINGTON.

## IN FOREIGN COUNTRIES

### CONTINUATION SCHOOL DIFFICULTIES IN ENGLAND

ACCORDING to Rudyard Kipling, England is expecting "an unparalleled outbreak of education guaranteed to produce a standardized-state-aided mind." He takes comfort, however, in the thought that British national life "has dowered us with a sufficient ballast to navigate thru whatever storms or brain storms may be ahead."

This sharp thrust at the new Educational Act loses a little of its venom when one learns that it was given at the festival dinner of the Royal Society of St. George and therefore, by some, might even be passed over as belonging to the realm of innocent pastime.

Perhaps it is merely Mr. Kipling's way of living up to his traditions and of expressing his irritation concerning the inconveniences that attend having everybody's children go to school.

But Mr. Kipling is right insofar as he reflects a great deal of uncertainty on the part of some public men and schoolmasters and a few employers as to the net results of the Act. A school official has said:

The Act makes great demands on the commercial and industrial world, and it will devolve on the principals of these schools to cultivate close relations with business men and employers and to secure their cordial cooperation. The success of this great new experiment in national education depends in considerable measure on the sympathy and assistance of the business world. The position of principal will require of its holder administrative ability, good scholastic attainments, and marked personality.

A correspondent of *The Times* says:

The day continuation school is at best a compromise, pending the realization of a complete scheme of preparatory and secondary education for all. As such, it is full of great possibilities, for good and for ill. In the absence of established standards each of the early continuation schools will be an experiment. Each will be

liable to receive a bias, and this bias will depend upon the personality and outlook of the first principals, as the head teachers are to be called in London. Those who are first put in charge of this continuation work will have it in their power to leave a great and lasting mark on education as a whole.

Already the continuation schools are beginning to spring up in different parts of England. Stratford-on-Avon boasts of the first school of this kind under the Education Act, and in April a school was started at Rugby. The correspondent continues:

Investigation of a number of existing schools showed the present writer many things to be copied and some to be avoided. On the whole the continuation schools conducted by the big firms are encouraging. They are almost without exception practical but non-vocational. They represent a sincere desire on the part of the heads of the firms concerned to retain over the adolescent boys and girls employed by them some sound educational influence at a very critical period of their lives. And in this connection one must insist on the importance of the personality of the teacher. Any scheme of education resolves itself into the provision of a suitable environment for the pupil, and of that environment the teacher is an important element. In the absence of a supply of suitable teachers, any scheme or system of education is foredoomed to failure. This cannot be borne too clearly in mind in connection with continuation work. On the whole the existing "works" schools are fortunate in their staffs. One rarely encounters there the figure of the jaded teacher, prematurely aged by the treadmill of day-work and night-work and drained dry of physical and spiritual vitality.

### DISLIKE THE TERM "VOCATIONAL"

TO AN American reader there seems to be a conscious effort on the part of educational writers in England to avoid the term "vocational." They describe a scheme of instruction that we in America have seen fit to classify under that term but they call it by some other name. This



is explained in part by a recent writer in *The Times* who says:

At the moment there is, up and down the country, a strong feeling against making the schools "vocational." The objection would, in a great many instances, be removed if teachers would show the public just what is intended. We do not want "vocational instruction"; we want the very best "education," and the very best educational method; and these we cannot get without connecting the instruction in science, art, history, and literature with the work and life of the district.

#### EVIDENCE OF A NEW SPIRIT IN ENGLISH MANUAL TRAINING

**L**AST month we gave a brief report of the recent annual conference of the National Association of Manual Training Teachers held in Manchester, England. In that we mentioned the fact that in connection with the conference there was held an exhibition of school handwork. The following review of this exhibition is taken from *The Schoolmaster*:

The display of work from places so far apart as Edinburgh and Dover gave visitors an excellent opportunity of realizing the new spirit which is permeating the work in different parts of the country. The rigid, accurate, rectangular work of the old schemes was absent, and was replaced by work which is a kind of compromise between that of the distant past and the expressional work one heard so much about a few years ago. The display showed an attempt to retain all the qualities of educational handwork and drop the defects, an attempt to cultivate the judgment and initiative of the boys, without sacrificing skill, neatness, and accuracy. But, like most things educational, a compromise had to be made, and, in setting the boy thinking and scheming over practical problems, the models have suffered in neatness and finish. Looking at the work, and judging the amount of thought and reflection expended by the pupil in making any particular model, one is forced to the conclusion that the gains outweigh the losses, and that the craftsman's finish and accuracy, if obtained by questionable means at times, is sacrificed for something more valuable. The same problem has been dealt with in the drawings. Line by line, from a blackboard, excellent drawings are produced—neat, nicely spaced and ac-

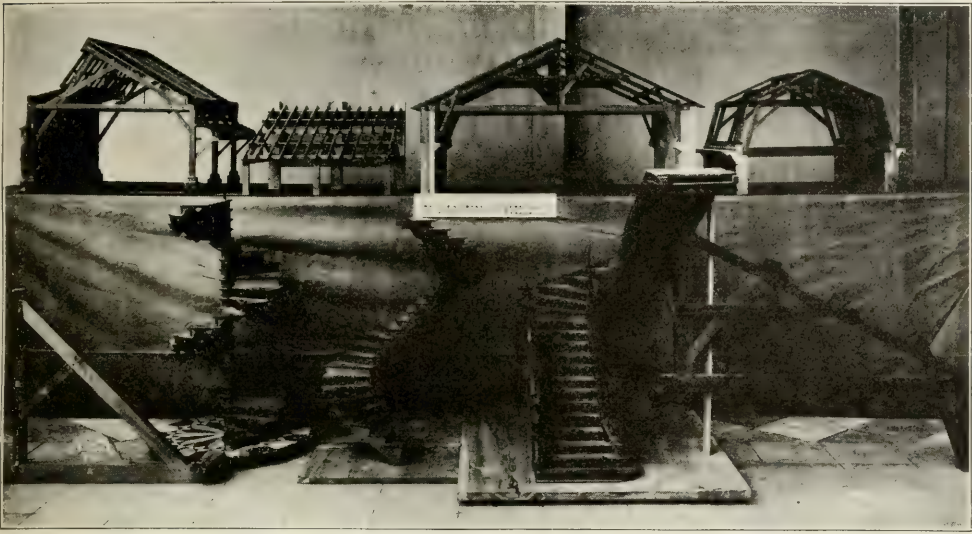
curate. The temptation to teach this way has been great, as it gives visible evidence of the quality of work turned out by "my" boys under "my" tuition, so that all who run may read. When, instead of being nursed thru the difficulties and problems, the boy is left with a minimum of information, and just sufficient instruction to work out his own salvation, the visible results are very different; but the real results—the ones that are of great importance in the development of the boy—are more valuable, although invisible to the inexperienced. By following the latter methods too rigidly, however, enthusiasm is easily killed, and interest wanes, and so again a compromise has been made between the neat and accurate taught by the line-by-line method and the freer method, which places the boy first and the drawing last, with results which are well illustrated by the work displayed.

#### AN EXHIBITION OF SCHOOL WORK IN FRANCE

**F**ROM our favorite English source of information, *The Times Educational Supplement*, we learn that a most successful exhibition of drawing and manual training work was held recently in the great galleries of the Louvre in Paris. The work was gathered from the French elementary schools, and proved to be a great inspiration of the teachers in these schools.

#### THE LONDON CONTINUATION SCHOOL SCHEME

**T**HE plans of the London County Council for meeting the requirements of the Act of 1918 in reference to continuation schools is now passing into its final stage. As outlined in *The Times* the sub-committee that has been working on the scheme has decided that the Council should aim at appointing January 1, 1921, as the date for opening its first group of compulsory day continuation schools. Although some of the neighboring authorities are doubtful whether their own continuation schools will be ready by that month, they are willing to accept the proposed date for those young persons who come to work in London. It is suggested that the last day



EXAMPLES OF CARPENTRY WORK, INDUSTRIAL SCHOOL OF URUGUAY, MONTEVIDEO

of the school term preceding the Christmas term, 1920, should be fixed as the appointed day. As about 60,000 boys and girls reach the age of 14 each year the Council's first group of compulsory day continuation schools would open with a roll of about 15,000 young persons. A further 15,000 students would be added to the total enrollment every three months for a period of two years from the date of opening.

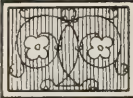
It is proposed in the first instance to establish 22 schools, each containing 360 school places. Each pupil will attend for only two out of the ten weekly sessions, thus allowing for an enrolment of 1,800 students. The Committee considers that attendance for two half-days of four hours each week will be the most convenient arrangement. They are also accepting the principle that schools should be established near the place of employment, rather than the place of residence. While it is proposed to report later as to details in regard to curriculum they hold the view that as

the timetable shall provide general education for those between 14 to 16 years, with at least a vocational bias for the 16 to 18 age groups, and in some cases education of a definitely technical or commercial character. It is considered that the general curriculum should embrace such subjects as English, including history, geography, economics, and civics, mathematics, general elementary science, drawing, domestic instruction for girls, and manual instruction for boys, and particularly physical training, which is compulsory under the Act.

The Sub-Committee express the hope that these schools will do much to train young people in the wise use of leisure, and with this view endeavors will be made to develop many social activities, sports and games, clubs, visits to places of educational interest, rambles, and other recreational organizations. In the opinion of the Sub-Committee, "the schools should eventually become in the evening, centers of vigorous social life."

*"I perceive that there is nothing better than that a man should rejoice in his own works; for that is his portion."*

—ECL. 3:22



## PROJECTS, PROBLEMS AND NOTES



### CONSERVATION OF LUMBER

ONE of the things being taught in the Vocational School of Springfield, Mass., according to the *Junior Craftsman* published by the school, is the necessity of conservation of lumber:

We can do our share in saving lumber by being careful how we use it in the shop. If we guess at the amount of stock we use it is quite probable we will either cut it off too long, thereby spoiling a piece of lumber, or cut it too short, with the same result.

Woodworkers especially should be interested in the conservation of lumber, for when our forests disappear then our jobs will disappear along with them.

The lumber camps of today are more saving than those of former years. They have a machine saw that cuts the trees very close to the ground, while in earlier years men cut the forests off, leaving very high stumps. When they got thru with a timber lot it was of little use for cultivation and no trees were planted.

### ILLUSTRATIVE MATERIAL FOR CLASS USE

IN making plans for next year do not forget that the U. S. Forest Service sends out excellent photographic exhibits of forestry material.

For classes in manual training there are exhibits of commercially important woods of the United States with explanatory charts and tables. The "Farm Woodland" exhibit, which is especially adapted for use in agricultural and rural schools, shows different types of woodland, how the farmer can use the woodland and sell the product, and how trees make waste land profitable and help the farmer in other ways. The exhibits are made up in panel form, each panel consisting of four sepia enlargements.

Teachers who are interested in the forests in a more general way will find what

they need in the original photograph exhibits of the Forest Service, which show forest conditions in the United States, how the forests are used, and how they may be preserved.

Schools that have a lantern or can provide one may borrow sets of lantern slides with prepared outlines for lectures on many topics connected with forestry. For instance, there are sets on forestry in the United States, and on nature study, botany, manual training, geography, and agriculture in relation to forestry, and on street trees and windbreaks. Recently a set has been made up on recreation in the National Forests.

It has become a very simple matter to provide a first-class lantern for a classroom. They are now made to connect at an ordinary lamp socket. The light in the lantern is from an incandescent bulb and there is no noise or flicker. It is a pleasure to use one.

For lists of lantern slides and photographic exhibits make application to the Forest Service, Department of Agriculture, Washington, D. C.

### OUR WORK SHOP

THE necessity of such a shop as is shown in the accompanying illustration grew out of the meager limitations afforded the Manual Training and Drawing Department in the building of the new high school structure, and of the necessary noise of machinery in this building. The shop mentioned was built solely for machinery and benchwork, while the former room will be used as drawing room and finishing room.

The work of the building was planned by E. M. Lough, janitor and practical car-





SCHOOL SHOP BUILT BY BOYS OF THE HIGH SCHOOL, FARMINGTON, W. VA.

penter, and the instructor, while the boys of the class did the great majority of the work. The only outside workmen required were in the laying of the foundation, and this was required only because it was desired that this part be finished before school began.

*Dimensions:* Length, 40 ft.; width, 22 ft.; outside measurement. Height from floor to ceiling, 10 ft.; gable rise, 7 ft., 8 in.

*Itemized material and cost:*

Hollow square tile for foundation (6750) .....	\$162.00
(hillside required more than level ground would.)	
Work on foundation .....	52.00
71 pcs. 2x6x12 chestnut (upper joist) @ \$54. M.....	45.85
89 pcs. 2x8x12 chestnut (lower joist) @ \$54. M.....	72.45
5 pcs. 2x8x16 chestnut @ \$56. M.....	6.10
79 pcs. 2x4x16 chestnut (rafters) @ \$56.50 M.....	47.77
100 pcs. 2x4x10 chestnut (studding) @ \$54. M.....	36.35
1515 lin. ft. pine sheathing @ \$54. M....	82.21
23 pcs. 2x4x10 @ \$54.50 M.....	8.07
1703 ft. pine (siding) @ \$66. M.....	113.08
Roofing 14 squares .....	45.50
1555 ft. Band B flooring, pine.....	\$ 88.62

142 1 in. ft. 1x10 cornice, fir.....	9.60
48 1 in. ft. 1x5 cornice, fir.....	15.50
190 1 in. ft. 1x4 cornice, fir.....	4.73
250 ft. 1 in. quarter round, poplar.....	3.17
64 ft. 1 in. gable strip.....	.96
12 windows .....	48.00
12 frames .....	37.80
177 lbs. nails @ 6c.....	10.62
7 lbs. nails @ 7c.....	.49
2 doors (4 panel) .....	6.70
2 pr. 3 1-2 in. butts.....	.80
2400 ft. ceiling .....	156.00
Hauling of ceiling.....	4.80
Stool for windows.....	2.73
Apron for windows 42 ft.....	2.52
192 ft. window bead.....	2.83
108 ft. 1x5 .....	4.27
202 ft. 5 in. casing, window.....	13.13
150 ft. quarter round.....	2.10

\$1,072.75

*Cost of equipping shop:*

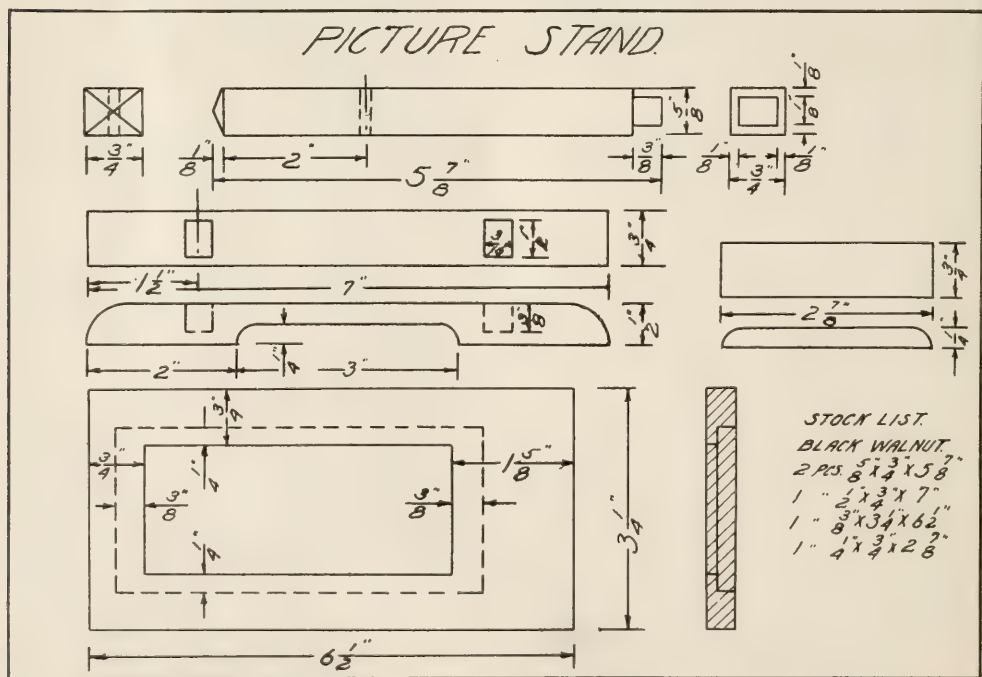
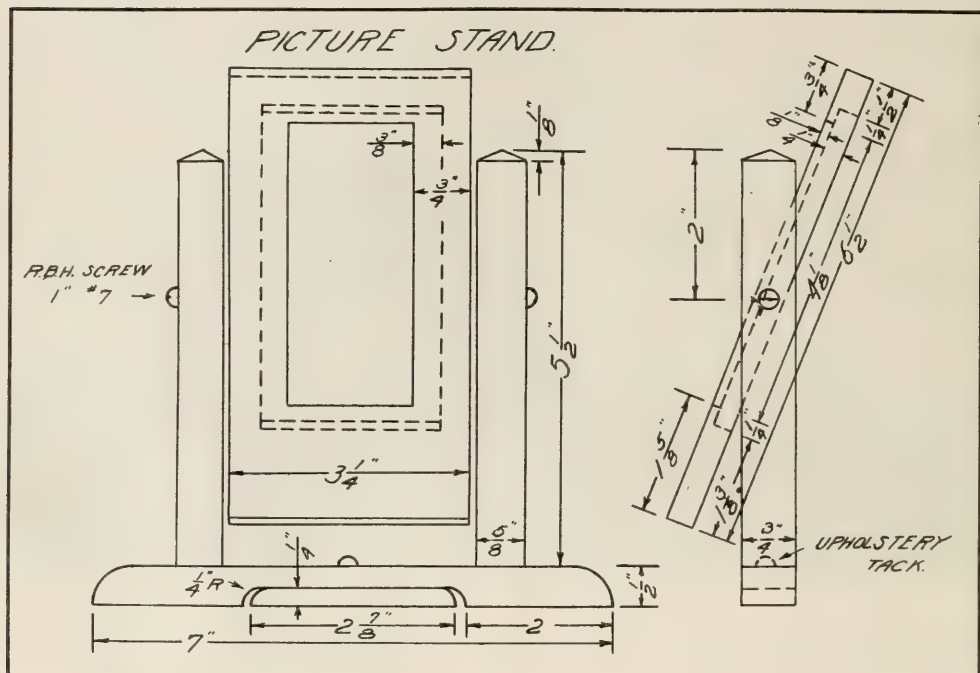
Electric installation .....	\$273.48
5 H.P. motor, Westinghouse.....	183.00
Planer (Secured from University).....	150.00
Rip-saw (saw bench) .....	171.00

\$777.48

R. S. RIDENOUR,

Instructor in Manual Training

High School, Farmington, W. Va.



### PICTURE STAND

I am sending you a photograph and drawings of a picture-frame stand, that I have used with success in the eighth grade. The stock used was scrap black walnut. The same design



works up very well with mahogany, but is more difficult for the boys.—H. G. Shumacher, Detroit, Mich.

### FINISHING TURNED WORK ON THE LATHE

*Question:* I am using a one-coat shellac and (rubbed down) finish on my turning projects at present. All the finishing is done by hand and I am getting fairly good results. However, I am looking for a quicker method, but still a good durable finish. I have tried the shellac and oil mixture method, using power, but the boys don't get this method very efficiently.

I have heard of a rubbed oil finish on turning work, but know very little about it. Can you advise me on this or another good, durable, fairly quick method of finishing wood-turning projects?—Fred O. Robinson, Helena, Mont.

*Answer:* There is no quick method to get a good polish. The polishing often takes longer than the turning.

Usually the difficulty with shellac is that it is put on too fast and so producing a streaked finish.

The oil finish is produced by applying repeated coats of boiled linseed oil and polishing

immediately, allowing 24 hours for drying between coats. This takes a long time and a lot of work, but produces the most lasting finish.

One of the following methods may meet your needs:

#### 1st Method:

1. Sand with No. 1 and No 1-0 Flint paper.
2. Stain if desired or leave natural.
3. Fill with paste filler if open grained wood.
4. Brush on Shellac while lathe is at rest.
5. Hold muslin cloth against work to wipe off surplus shellac while lathe is in motion.
5. Repeat No. 5 till desired finish is produced.

#### 2nd Method:

1. To 3, as in 1st Method.
4. Polish as in French Polishing with lathe in motion. (If too much shellac is used work takes on lines of shellac.)

#### 3rd Method:

1. To 3, as in 1st Method.
4. Polish with Wax.

#### 4th Method:

1. To 3, as in 1st Method.
4. Apply varnish with brush while lathe is at rest.
5. When hard, grind with pumice stone powdered on cloth.

#### 5th Method:

1. To 5, as in 4th Method.
6. Another coat of varnish when dry.
7. Polish with rotten stone on cloth.

#### Polish for turned work.

Dissolve 1 oz. of Beeswax in enough turpentine to make a stiff paste.

Dissolve 1 oz. sandarac in 1-2 pt. alcohol. Add latter *very slowly* to former. Apply with woolen rag as work turns. Polish with linen cloth.—E. A. Johnson, Bradley Institute.

### CLEANING THE SHELLAC

The following suggestion may be of interest to readers:

Very often in the shop the shellac gets dirty. To clear it, dissolve one-half teaspoon of oxalic acid to every pint of shellac. Stir it in well and leave it to stand over night.

I have found the cleaning of shellac in this way, before finishing patterns and poster and bulletin boards, to give a very clear finish.—H. G. Shumacher, Detroit.



## CURRENT PUBLICATIONS

*Machine Tool Operation.* Part I. The Lathe, Benchwork and Work at the Forge. By Henry D. Burghardt, instructor in machine work in the William L. Dickinson High School, Jersey City, N. J. McGraw-Hill Book Co., New York, 1919. Size 4 3-4x7 1-2 in.; 326 pages, containing 231 illustrations; price, \$2.00.

This is a textbook for the use of students in machine shop classes. It is the outgrowth of a system of notes, prepared by the author to supplement oral instruction given to his classes. It covers (a) lathe construction and manipulation (b) cutting tools and cutting speeds, (c) the scale, caliper, snap gauge and micrometer, (d) centering, (e) facing, (f) turning in a lathe, (g) chucking work, (h) tapers and angles, (i) threads and thread-cutting, (j) face-plate work, (k) hammers, screwdrivers, wrenches and hacksaws, (l) laying out, (m) chipping, filing and scraping, and (n) work at the forge. An appendix includes tables and rules valuable to a machinist. At the end of each chapter is a list of questions covering the main points in the chapters. Many of these questions were originally printed in the "Manual for Machinists" prepared by the author for the Committee on Education and Special Training of the War Department.

The book does not contain a course of instruction but may be used to advantage with any course.

*The Practice of Presswork.* By Craig R. Spicher, instructor in Presswork, Carnegie Institute of Technology. Published by the author at Pittsburgh, Pa. Size 5 1-2x7 1-2 in.; 240 pages.

The aim of this book is to give "the shortest, best and most practical methods of presswork." It covers both platen and cylinder. It discusses plate process printing, overlays, rollers, automatic feeding, the manufacture and practical use of printing inks, etc.

It is a valuable reference book for the school print shop.

*Physiology and Hygiene.* By Charles P. Emerson and George H. Betts. The Bobbs-Merrill Co., Indianapolis, 1920. Size, 5 1-2x7 1-4 in.; 323 pages.

This is book two of the Hygiene and Health Series, intended to stimulate pupils to take proper care of their bodies.

*The Junior High School.* By G. Vernon Bennett. Warwick & York, Baltimore, 1919. Size 4 3-4x7 1-4 in.; 224 pages.

This book presents the junior high school as a problem to be worked out in American schools, gives a brief history of the movement for such a school, objections to it, results of experiments and courses of study. It discusses teaching in this new type of school, its administration and its relation to the senior high school.

### RECEIVED.

*The Cooperative Plan of Engineering Education.* School of Engineering, University of Pittsburgh, Pittsburgh, Pa.

*Teacher Training Departments in Minnesota High Schools.* By Lotus D. Coffman, president of the University of Minnesota. Issued by the General Education Board, 61 Broadway, New York, N. Y.

*Better Public School Education in Utah.* "A More Practical Preparation for Living." A striking statement of Utah's ideals and accomplishments in education. Published by the Utah Educational Campaign Committee, Salt Lake City.

*A Study of Rural School Conditions in Ohio.* By Vernon M. Riegel. Issued by F. B. Pearson, state superintendent of public instruction, Columbus, Ohio.

*The Functions of Civilians in Army Education.* By C. R. Mann.

*Effect on Recruiting of Educational and Vocational Training in the Army.* By Capt. James Totten.

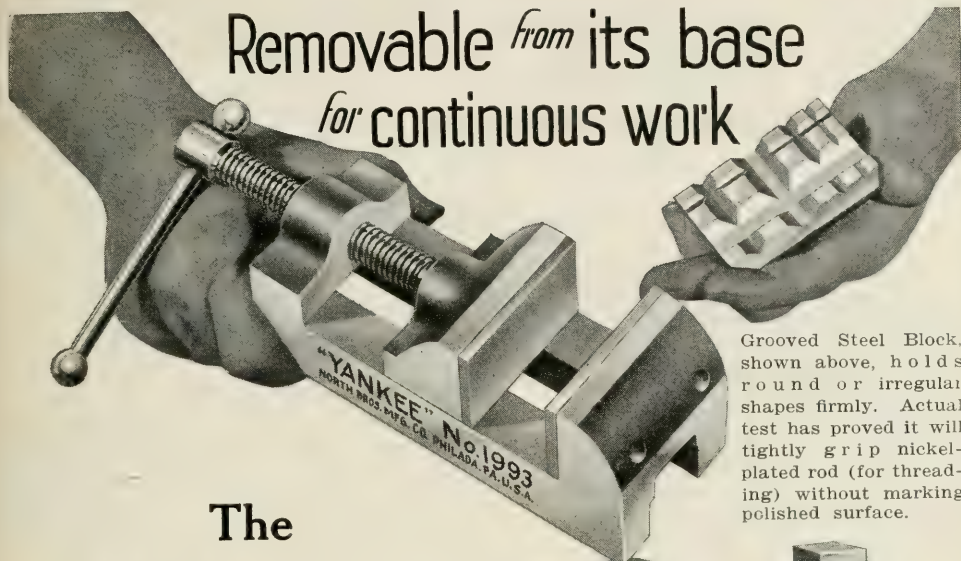
*Vocational Training in the Army.* By Dr. E. M. Rauck.

These three pamphlets are issued by the War Plans Division of the War Department, Washington, D. C.

*Sights and Events 'Round the Town.* Issued and distributed free by the Community Service of Chicago. Just what one needs if he is to visit Chicago this summer. Address Community Service, 1021 No. 108 So. LaSalle St., Chicago, Illinois.

*Making Things.* Part I, a second year's work, of the four-year rotation plan for vitalizing agriculture in the rural schools. By P. G. Holden and C. M. Carroll, published by the International Harvester Co., Chicago. This is a 72-page pamphlet full of practical help for rural schools. It is organized as 56 lessons, the first 22 of which are in woodworking and the remainder in rope work. The series on rope work is the best that we have seen. The pamphlet is well illustrated.

Removable *from* its base  
for continuous work



Grooved Steel Block, shown above, holds round or irregular shapes firmly. Actual test has proved it will tightly grip nickel-plated rod (for threading) without marking polished surface.

## The "YANKEE" VISE

You can lift the "YANKEE" Vise off its base, work and all, when you go from bench to drill press—to milling machine—to emery wheel and so on.

This enables you to finish every job more accurately and in less time.

The "YANKEE" Vise sets true in any position. Bottom, sides, ends and top machined true and square.



**Students! Teachers!**  
Write for free "Yankee" Tool Book. Pictures and text show you how to drill metal, tap, bore in wood and drive screws the most efficient way.



**No. 1993.** with Swivel Base. Set-screw holds vise to base; camthrow lever locks position. Body, 7 1-4x2 3-4 (wide) x3 in. Hardened steel faced jaws open to 3 1-8 in.

**No. 993.** Same as No. 1993, except that it does not have swivel base.

**No. 1992.** (New Size) Body, 4 7-8x2 (wide) x2 1-16 in. Jaws open to 1 15-16 in.

**No. 1991.** (New Size) Body, 3 5-8x1 1-2 (wide) x1 1-2 in. Jaws open to 1 1-2 in.

Your Dealer Can Supply You

**NORTH BROS. MFG. CO.**  
Philadelphia.

# "YANKEE" TOOLS

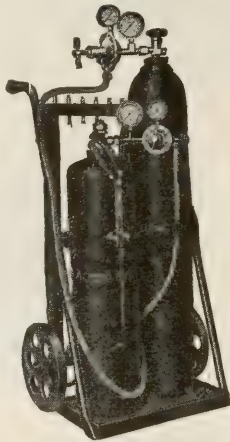
*Make Better Mechanics*

# Imperial Equipment for Manual Training and Vocational Schools

One of the strongest demands now being made upon public and vocational schools, is for instruction in the use of Acetylene Equipment.

Imperial Welding and Cutting Equipment represents the highest achievement yet reached in the use of the Acetylene Torch. It is Economical, Efficient, Safe, Speedy, Practical and Portable. Welds anything in metal and cuts everything in wrought iron and steel.

Being made of the very finest quality materials and of the best workmanship, Imperial Outfits are durable and strong.



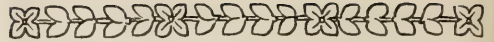
## Special Instruction Courses Furnished Teachers

With the Imperial Equipment, we furnish complete instruction courses, together with full charts, data, etc., which will be helpful in conducting practical classes in the use and operation of Imperial Outfits.

*Send today for Free Catalog and details on Imperial Equipment.*

# The Imperial Brass Manufacturing Co.

511 S. Racine Ave. Chicago



## FIELD NOTES

*(Continued from p. X.)*

WITH A VIEW TO AROUSING PUBLIC interest in the problem of adapting the immigrant to American life, the Interacial Council issued a call for a national conference on immigration which was held in the Engineering Societies' Building, 29 West 39th St. The conference was attended by representatives of industry, agriculture, finance and labor, and a constructive program was adopted defining the status of the immigrant and outlining methods that may be followed in assimilating him. This problem is now being considered by many of the largest industries in the country and classes for the immigrant have already been established in the mills and factories of the big industrial organization. Vocational education must play a big part in the educational problem of the immigrant.

AT A RECENT MEETING of the Committee on Industrial Education of the National Association of Manufacturers a number of charges were made against the public school system. Among the most important are the following:

1. Too many women teachers.
2. Insufficient system of vocational education. School boards are dominated by professional men.
3. School boards should be composed principally of business men and manufacturers. An elaborate report was made pointing out the need of more efficient vocational education that will really make labor efficient. Up to this time little attention has been paid to the method of developing efficiency because labor was cheap and plentiful. But since Europe is facing a shortage of 15,000,000 workers and the United States 5,000,000, as a result of the war, it has become necessary to train every three average workers to do what five men have been accustomed to do, providing this is possible with due regard to health and comfort.

THE CLOSING EXERCISES HELD at the School for Printers' Apprentices at the Hudson Guild, 436 W. 27th St., New York City, marks the conclusion of the seventh successful year of this institution which is supported and managed by employing printers, Typographical Union No. 6, and the Publishers' Association of New York, in cooperation with the Hudson Guild.

The school limits its work to the instruction of registered apprentices who are employed in print-

*(Continued on p. XVI.)*



# *The foreman says:*

"I suppose it's because I used them myself when I was at the bench, but it does seem as though the best men in the shop have a preference for Starrett Tools.

"Of course, most of them sort of got into the habit of relying on Starrett for fine work when they were apprentices and journeymen.

"Speaking of apprentices — that little red book there, 'The Starrett Book for Machinists' Apprentices,' has saved me more time and helped more young fellows to learn how to do things right than anything else in the shop.

"When a young lad asks me how to do this or that, I usually tell him or show him, and then ask him if he has one of those books. I've noticed that as soon as he gets one of them he doesn't have half so many questions to ask.

"Starrett gets out another book, 'The Machinists' Data Book,' that's just about as big a help to the experienced machinist. It's got all the tables and formulas and so on that he ever needs, and it isn't cluttered up with a lot of engineers' stuff that he doesn't use.

"Yes, I bought one of each of the books down at the hardware store, as soon as they came out. They cost me seventy-five cents each, but they're worth it."

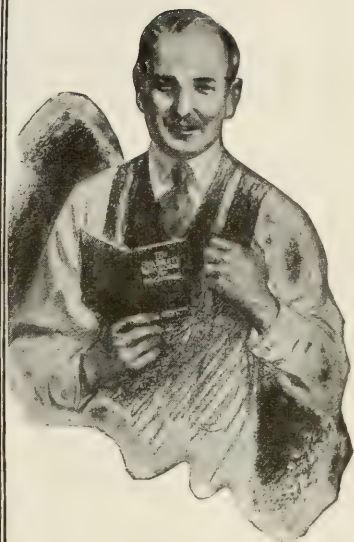
## **The L. S. STARRETT COMPANY**

THE WORLD'S GREATEST TOOLMAKERS ·  
Manufacturers of Hack Saws Unexcelled  
**ATHOL, MASS.**

Machinists the world over have put their faith in the accuracy of Starrett Tools for thirty-nine years. Write for illustrated Catalog No. 21 "E. F."



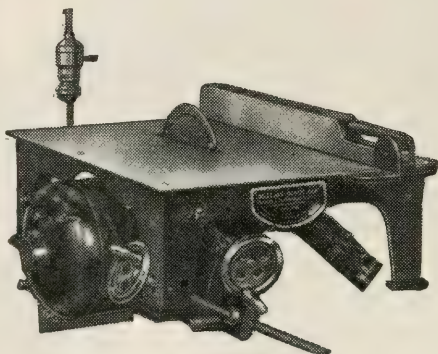
42-989



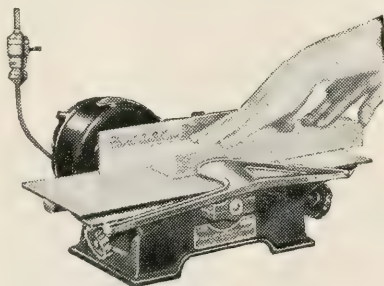
## **Starrett Tools**



# WALLACE BENCH MACHINES



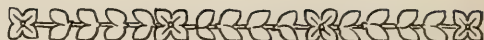
Over 1800 Wallace  
Bench Saws and 4-  
and 6-inch Jointers  
will be operating in  
schools and colleges  
this year.



Send for Catalog

**J. D. WALLACE & CO.**

1408 Jackson Blvd., Chicago



## FIELD NOTES

*(Continued from p. XIV.)*

ing plants, of whom there were more than 500 during the year. A regular four-year course, comprising special branches of typographical work in addition to lectures on the history and practice of the printer's art, the ethics of the trade and the use of the English language is prescribed.

Under A. L. Blue, the director, the registration has grown from sixteen students to 541 during the seven years of its existence.

A. J. Portenar, a director of the school, recently stated that the problem of raising funds to provide new equipment for the coming year would necessitate a tuition fee of \$100. Six medals were awarded for general excellence and special work in English and ten members of the class received honorable mention. This school is doing very efficient work and shows what can be done by employers and employes in educating young apprentices.

—W. H. DOOLEY.

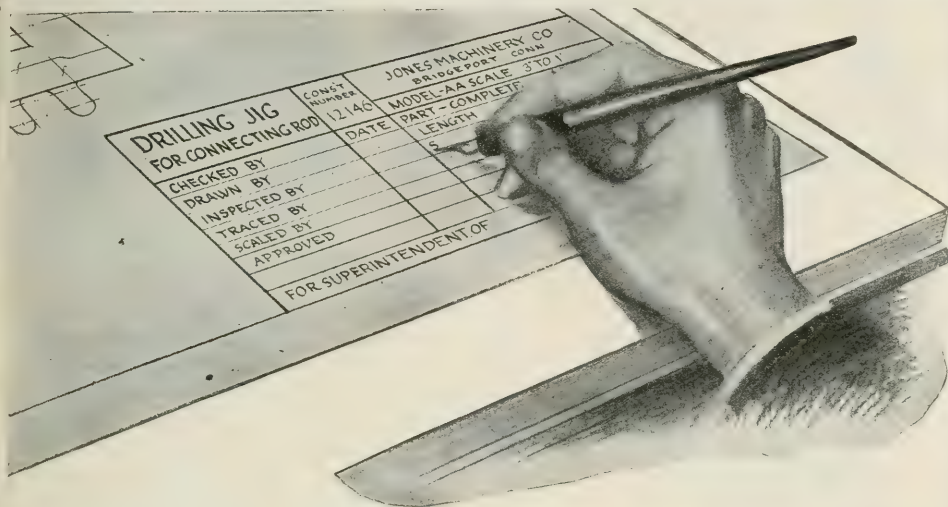
## FOURTH ANNUAL MEETING OF THE VOCATIONAL AND ARTS ASSO- CIATION OF NEW JERSEY.

The fourth annual meeting of the Vocational and Arts Association of New Jersey was held on May 14th and 15th at Rutgers College, New Brunswick, N. J. The meeting held this year was the largest ever held by the Association, about three hundred teachers being in attendance. The interest and enthusiasm shown by the members was very encouraging and amply repaid those who worked hard to make the meeting a success.

Some of the exhibits which attracted considerable attention were: cement work, manual training in rural schools, sewing, printing, linoleum engraving, and illustrations and charts showing the methods used by different domestic science teachers in the state in checking up their work.

President W. H. S. Demarest, of Rutgers College, opened the convention by welcoming the teachers and offering them the hospitality of the college. He was followed by County Superintendent of Schools, H. Brewster Willis, of Middlesex, who told of the work being done in that county in vocational work, art and manual training.

*(Continued on p. XVIII.)*



## What does it cost you to do this?

Time your best letterer when he next titles and borders a drawing. Add to this the time required to unroll and cut the cloth to your standard size. Then multiply this time by the yearly number of drawings.

You will find that a surprisingly large percentage of drafting time is consumed doing something that you can buy ready done at but a fraction of the cost, and done better and more accurately than your best letterer can do it.

The hundreds of NATIONAL TRACING CLOTH customers who are now using cut and printed sheets exclusively have made possible our large equipment of power cutters and printing presses, designed especially for cutting, titling and bordering tracing cloth.

Let us quote you on your requirements. You will find the cost very reasonable.

### NATIONAL TRACING CLOTH CO.

SAYLESVILLE, R. I.

New York Office

72 Leonard Street

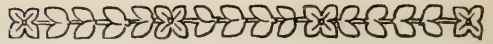
Other Products. National Blueprint Cloth  
National Vellum Cloth

National Tracing Paper  
National White Pencil Cloth

*National*  
TRACING CLOTH

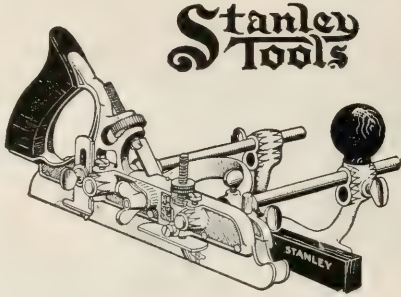
107-8





## FIELD NOTES

(Continued from p. XVII.)



# STANLEY "FORTY-FIVE" PLANE

ONE of the handiest tools for woodworking in a Manual Training Equipment. In a compact and practical form it combines seven planes in one.

- 1—Beading and Center Beading Plane.
- 2—Plow.
- 3—Dado.
- 4—Rabbit and Filletster.
- 5—Match Plane.
- 6—Sash Plane.
- 7—Slitting Plane.

Twenty-one cutters are furnished with each plane, twenty-four additional cutters are regularly carried in stock.

An attractive twelve-page booklet printed in colors, explaining in detail the different uses to which Stanley "Forty-five" may be put, will be sent upon request.

**STANLEY RULE & LEVEL CO.**  
NEW BRITAIN, CONN. U.S.A.

Assistant Commissioner of Education Wesley A. O'Leary, and State Director of Continuation Schools E. A. Reuther, spoke on the development of the continuation school idea and urged the co-operation of every teacher in every way possible for extending educational opportunities to those who are forced to enter industry without satisfactory preliminary education.

At the dinner, held in the evening at the Hotel Klein, Judge Peter F. Daley spoke on "The School as an Agent in Americanization". He declared that the vocational idea is one of the biggest advances that has been made in modern education, and complimented the teachers on the work that has been done in this state. He also stated that it has done as much as any other agency yet developed in putting the ideals of Americanism into the minds of the children of foreign-born parents.

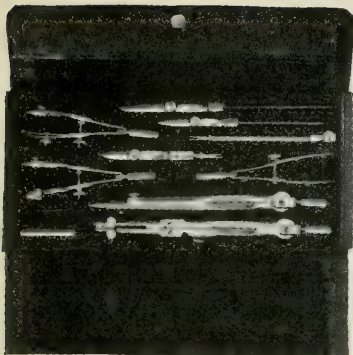
Dr. Frank V. Thompson, Superintendent of Schools, Boston, Mass., spoke on "Industrial Education and the New Order". He declared that both employers and employees are coming to realize more keenly the importance of correlation in vocational work and fundamental education and both are doing their best to develop it. The purpose of the vocational school, he said, is to accomplish this ideal.

The teaching of practical arts was treated from many angles in the round table discussions which were held in the college buildings on Saturday morning. Twelve different group meetings were held and the members representing the various types of schools met and discussed their problems. The talks and discussions were very interesting and instructive.

The convention closed with a luncheon at the Hotel Klein and an address on "Vocational Training vs. Vocational Education" by Dr. Frederick B. Robinson, Dean of the College of the City of New York.

Dr. Robinson asserted that vocational training was necessary during the war in order to train men as quickly as possible, but the emphasis of the vocational school today should be made in educating the boy or girl in the fundamental principles of their vocation in order that they may have an intelligent conception of it instead of performing operations mechanically without knowing the reasons why.

(Continued on p. XX.)



## Mechanical Drawing Sets

Set as per Photo, \$8.00

Special prices on well constructed drawing instruments. All sizes.

Prices from \$4.85 to \$8.00

Send for our Catalogue and Special prices. Write to-day—and save from 100 to 200 per cent.

**National Instrument Company**

3314 Hutchinson Street

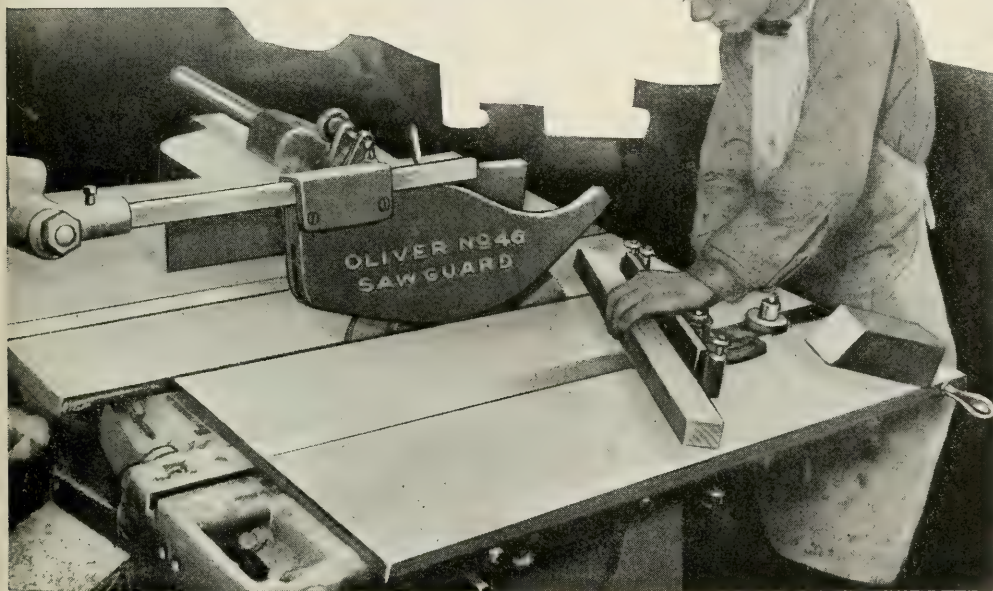
CHICAGO, ILL.

## “Oliver Quality”

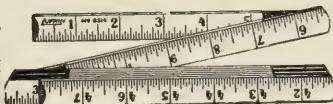
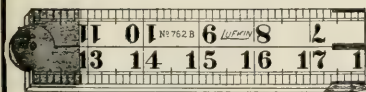
Wood Working Machinery.

Have You an Oliver Catalog?

OLIVER MACHINERY CO. Grand Rapids Mich.



# LUFKIN



STEEL and WOOD RULES - - MEASURING TAPES

Complete high grade lines

On Sale Everywhere. Send for Catalog.

SPECIFY—**LUFKIN**

**THE LUFKIN RULE CO. Saginaw, Mich.**

New York

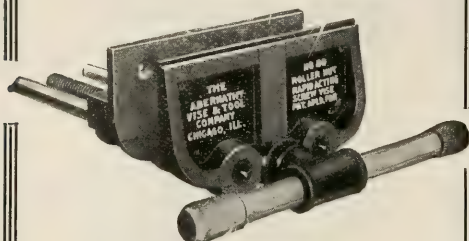
No. 106-110 Lafayette St.



# Roller Nut Vises

## RAPID ACTING OR CONTINUOUS SCREW ADJUSTMENTS

The simplest in construction,  
the longest wearing,  
the most satisfactory in action of any  
rapid-acting vise on the market



No. 80

The size generally used in Technical and  
High Schools

Manufactured by

**The Abernathy Vise & Tool Co.**

NOT INC.

2814-42 W. 26th Street

CHICAGO, ILL.



## Universal Grinders

Will handle almost any job of machine  
shop grinding, cylindrical, internal or  
surface.

They will sharpen accurately, milling  
cutters of all shapes, reamers, counter-  
sinks and counterbores.

The large assortment of Attachments  
furnished are simple and easy to adjust.

Our No. 7 catalog shows these Attach-  
ments set up for 23 different grinding op-  
erations.

We will be glad to send one free to  
any instructor.

**Greenfield Machine Co.**  
Greenfield, Mass., U. S. A.



## FIELD NOTES

(Continued from p. XVIII.)

At the business meeting the following officers  
were elected for the coming year: President,  
C. E. Parsil, New Brunswick; Vice President,  
Miss Griselda Ellis, Newark; Secretary, James  
E. Gaffney, Atlantic City; Treasurer, Miss  
Mabel Gaston, Montclair.

—JAMES E. GAFFNEY, Secretary.



EDWARDS CLUB  
NEW ENGLAND VOCATIONAL SCHOOL  
RUTLAND MASS

The New England Vocational School at Rut-  
land, Massachusetts, established for the re-  
habilitation of gassed ex-service men, will soon  
dedicate Edwards Club (named after Major  
General Clarence R. Edwards, formerly com-  
manding General of the 26th Division). At  
present there is a large crew of men at work  
on this building, making every effort to have it  
completed and ready for occupancy by the 10th  
of July. This will be used for sleeping and  
living quarters of the convalescent service men  
undergoing training at the Vocational School.  
Edwards Club is of very attractive design and  
is planned for comfort and ease of the former  
doughboy and gob during rest times. It is lo-  
cated on the brow of a hill facing the south and  
it will be of stucco exterior finish and has a  
large sun parlor and portico on the south so that  
the maximum amount of sun may be obtained.  
The view is unusual in its attractiveness as one  
can look over miles of rugged Massachusetts  
country from Edwards Club. The building is  
98 ft. 10 in. long and 30 ft. 10 in. wide. The  
basement includes a classroom 36 ft. by 30 ft.  
and a locker room with lockers to accommodate  
the clothing and personal belongings of 80 ex-  
service men who will live in the building. In  
this locker room is a fireplace so that it will be  
warm and cheerful even in the coldest days of

(Continued on p. XXII.)



# MAYDOLE HAMMERS



Adze Eye  
Nail Hammer



Machinists'  
Hammer



Blacksmiths'  
Hammer



Copperworkers'  
Hammer



Adze Eye  
B. F. Hammer

JUST A FEW OF OUR HAMMERS

All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request

THE DAVID MAYDOLE HAMMER CO.

NORWICH, N. Y.



Dixon's Eldorado is an inspiration to fine work—an invitation to begin, to draw—to do!

Teachers of Mechanical or Freehand drawing will appreciate the classroom value of this "master drawing pencil". It makes the lesson easier!

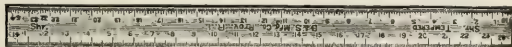
**DIXON'S  
ELDORADO**  
*"the master drawing pencil"*

#### SAMPLE OFFER TO TEACHERS

Dixon's Eldorado is made in 17 leads. Tell us whether you teach Mechanical or Freehand drawing and we will send you suitable samples.

JOSEPH DIXON CRUCIBLE COMPANY, Pencil Dept. 19-J, Jersey City, N. J.

## Patternmaker's Shrinkage Rules



We carry the largest and most complete stock of Patternmaker's Shrinkage Rules in the Middle West; including the following well-known brands: Stanley Boxwood Rules; Lufkin Boxwood Rules; Lufkin Steel Rules; Brown & Sharpe Steel Rules and Starrett Steel Rules. Write us for Prices.

Our new complete catalog of Patternmaker's Supplies, Tools and Equipment is now ready. Write for your Copy.

**ADAMS & NELSON CO.**

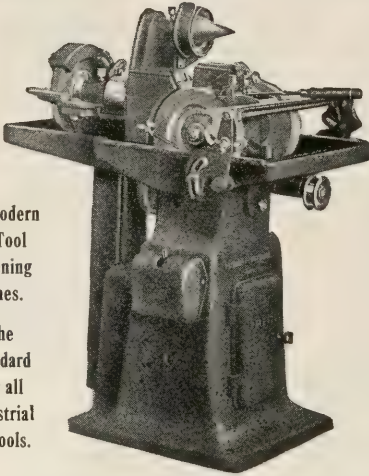
1328 W. North Avenue

CHICAGO, ILL.

## Mummert-Dixon Oilstone Grinders

The Modern  
Edge Tool  
Sharpening  
Machines.

The  
Standard  
for all  
Industrial  
Schools.



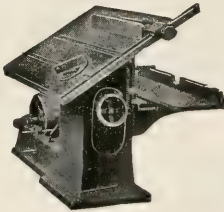
No. 481—Motor or Countershaft Drive  
An automatic attachment for grinding long knives can  
be furnished with this machine.

### THE FIVE LEADING FEATURES:

- |  |                 |
|--|-----------------|
| 1 Coarse Oilstone Wheel,                 | 3 Grinding Cone |
| 2 Fine Oilstone Wheel,                   | 4 Leather Wheel |
| 5 Emery Wheel. All at your finger's ends |                 |

Send for full descriptive bulletin

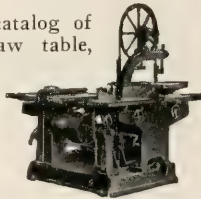
MUMMERT-DIXON CO., Hanover, Pa.



## Crescent Wood Working Machines

are the tools your students will  
eventually use so give them the  
opportunity now of learning  
about this splendid line of wood  
working machinery.

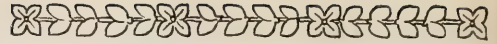
Send today for our catalog of  
band saws, jointers, saw table,  
shapers, variety wood  
workers, planers, planers  
and matchers, cut off  
saws, disk grinders, bor-  
ers, hollow chisel mort-  
isers, Universal wood  
workers.



## The Crescent Machine Co.

46 CHERRY ST.

LEETONIA, OHIO



## FIELD NOTES

(Continued from p. XX.)

winter. Another room 30 ft. by 12 ft. houses the lavatories and toilets. The heater and storage room are also on this floor.

The first and second floors contain four wards 18 ft. by 30 ft. and a large lounge and writing room facing the south and having its front enclosed in glass. This room contains a large fire-place and will be furnished with furniture and fixtures usually found in the Y. M. C. A. and other club rooms. On these floors are also private rooms for the orderlies, closets and toilets. There is probably no institution in the country furnishing a club of this description for the ex-service men. The erecting of this building was made possible through a generous gift of the American Red Cross.

A special conference on part-time education is to be held July 12-16 at the State Normal School, Oswego, N. Y. This conference is planned particularly for executives and administrators in the field of public or private education who are interested in part-time schools. Persons holding positions of the following type in cities and villages of the State of New York having a population of 5,000 or more, are invited by the Division of Agricultural and Industrial Education, State Education Department, to attend this series of meetings: (1) Members of the village and city boards of education; (2) Village and city superintendents of schools; (3) Assistant Superintendents of schools; (4) Directors and supervisors of part-time schools; (5) Juvenile placement and advisement officers; (6) Employment managers.

The purpose of the conference is to point out the distinctive features of part-time education and to indicate its place and part in a scheme of public education. To this end a group of experts on part-time schools will be in attendance upon the conference who will give advice and counsel based upon actual experience in this kind of work as to the special problems which present themselves in this relatively new phase of education.

Inasmuch as nineteen states have compulsory part-time laws on their books, a conference on the subject is indeed timely.

The following appointments have been recently made at the New England Vocational

(Continued on p. XXIV.)



# How's This?

\$3000 or more. Don't fail to write us if available for a better place. We can add dollars to your income.

**SPECIALISTS' EDUCATIONAL BUREAU**

1042 N. Grand Ave.  
St. Louis, Mo.

## FIELD NOTES

(Continued from p. XXII.)

School, established for the rehabilitation of ex-service men, Rutland, Massachusetts: Andrew Holmes, formerly of the General Electric Company, Lynn, Massachusetts, instructor of mechanical drafting; Walter Cole, formerly instructor of typewriting in the Northampton Commercial College, Northampton, Massachusetts, head of the commercial department; Myron Davis, of Lynn, Massachusetts, instructor of automobile mechanics; John O'Brien, of White Plains, New York, head of the agricultural department; Edward O'Connor, of Fall River, Massachusetts, instructor in the academic department; P. C. Tibbetts, of Lexington, Massachusetts, instructor in the house carpentry department; George A. Bryant, instructor of watch repairing; and Miss Ethel W. Barbour, recently of the United States Army, head aide of the occupational therapy work.

Arthur B. Mays, who has for several years been in charge of the manual arts department at the State Normal School, Huntsville, Texas, has recently accepted a position as supervisor of vocational education at Camp Travis, Texas. Mr. Mays will be missed in the normal school work of the South in which work he has been one of the progressive men, but he will certainly add strength to the force being gathered to carry on the new vocational work of the United States Army.

In the May issue of the **MANUAL TRAINING MAGAZINE** a statement was made in this department which was incorrect. The first class in Tennessee to graduate in vocational education under the Smith-Hughes Act was a class from the public schools of Memphis instead of the West Tennessee Normal.

In the city of Lawrence, Mass., it is estimated that there are 1650 to 1700 boys and girls from 14 to 16 years old in the textile mills and mercantile establishments who will be required to attend continuation school 4 hours a week beginning in September. This is typical of what will take place in other cities thruout the state.

WE can probably place any well qualified teacher of Manual Arts at \$1400 to \$2500 before September 1st. A few positions pay



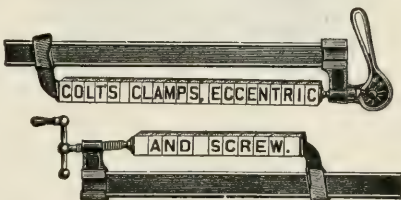
## FORSE APRONS

For Wood Shop, Print Shop, Machine Shop and Laboratory.

4 styles in white and tan. Wear-proof duck and acid-proof fabric. "Never-rip" pockets and seams.

Free Apron to Instructor with first order.

FORSE MFG. CO.  
Anderson, Indiana

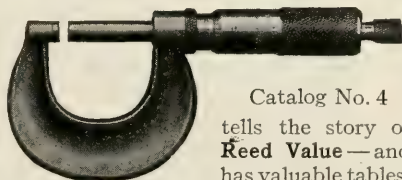


Forty styles of Quick Acting Clamps for the Worker in Wood, Cement and in the trades generally.

Your dealer will supply you.  
Ask for catalog No. 296.

**BATAVIA CLAMP CO.**  
237 Center Street BATAVIA, N. Y.

## THE REED



Catalog No. 4  
tells the story of  
**Reed Value**—and  
has valuable tables.

**REED SMALL TOOL WORKS**  
28 Cherry Street WORCESTER, MASS.

## TOOLS

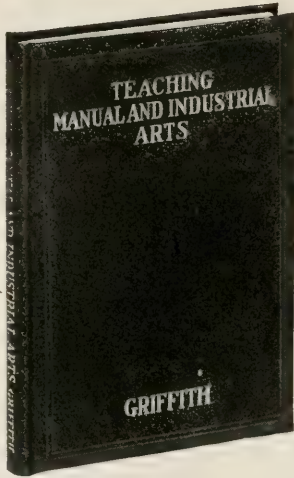
For Manual Training Shops.  
Send your inquiries to and get the especially low prices quoted by

**MONTGOMERY & CO. Inc.,**  
105 Fulton Street New York City



JUST PUBLISHED

# Teaching Manual and Industrial Arts



---

HAS ALREADY BEEN SPOKEN OF AS

*"The greatest book yet published dealing  
with the problem of Industrial Education."*

---

By IRA S. GRIFFITH

PROFESSOR OF INDUSTRIAL EDUCATION,  
UNIVERSITY OF ILLINOIS

**T**HIS VALUABLE BOOK sets forth clearly the best results of modern psychology as applied to the teaching of the manual and industrial arts. It is essentially a textbook for use in normal schools and colleges by prospective teachers, but is well adapted for reference use by all manual and vocational teachers now in service.

It presents the philosophy of teaching manual and vocational education in terms of psychology, social science and economics.

It takes the conclusions of Thorndyke, Judd, Bagley, Dewey, and others and restates them in terms of a common philosophy and methodology. It illustrates them and gives them to the profession as a new entity, serving as a basis for evaluating the manual and industrial arts.

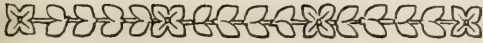
To the thoughtful teacher, whether beginner or experienced supervisor, this book is of special value. The student of general education, administrator or educational expert who is fair to himself and the manual and industrial arts will find new light in its discussions and to them it will prove a valuable source of information about the educational theory and practice.

Professor Griffith is a man of sound judgment, an able writer with wide and successful educational experience in which he has tested his theory by application to practical situations.

Price, Postpaid, \$2.00

**THE MANUAL ARTS PRESS**

PEORIA, ILLINOIS



## TRADE NOTES

### HOUSE ORGANS

In the development of modern business the House Organ has been an important factor. Almost as much thought and study is given to its content and make-up as to any other part of the business. None of them are mere advertisers of a firm's goods; instead they often contain much valuable related information which even a layman is glad to have. One fine example of this is *The Disston Crucible*, published by Henry Disston & Sons, Philadelphia. The May number contains one article in particular which every woodworking teacher would find interesting. It is entitled "The Prehistoric Obsidian Saws of Central California" by James A. Barr, of the Sierra Educational News. Over forty years ago Mr. Barr began to study the mounds, burial places and implements of these ancient saw makers. The Barr collection comprises fully 6,000 implements in obsidian, stone, bone, shell and clay, and represents the exploration of more than 300 villages, camp sites and burial places. The article is illustrated and decidedly interesting.

The front cover page of the May number of *Graphite*, published by Joseph Dixon Crucible Company, Jersey City, N. J., contains a pencil etching of the most noted Colonial shrine in Boston, namely, the old State House. A short historical sketch of the building brings out many items of interest to the general reader. A photograph of President George T. Smith and thirteen of the twenty-one employees who have been with the Company over forty years, adds a pleasing note to this issue.

A recent issue of the *Lighting Line*, the house organ of J. A. Fay & Egan Co., Cincinnati, Ohio, celebrates the nineteenth year of the founding of that well-known firm. Photographs of the earliest buildings down to the present, accompanied by a historical sketch of the development of the business, emphasizes the proverb, "Great Oaks from Little Acorns grow". In another issue of the house organ there is presented the main facts concerning Stephen Girard and his founding of Girard College, and an item on "Technical Schools and Their Relation to Modern Business".

(Continued on p. XXVI.)



**B**UFFALO equipped trade schools and manual training departments insure working under practical conditions.

Our Engineering Department will be glad to give you accurate data on blowers, exhausters, forges, drills and punching and sheering machinery.

Write for catalogue  
205-31

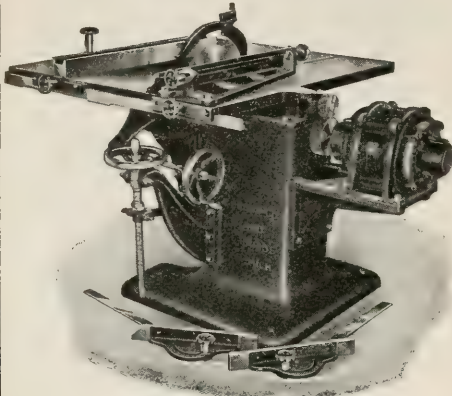
**Buffalo Forge  
Company**

BUFFALO : : NEW YORK

*"Buffalo"*

# SAW TABLES

## For MANUAL TRAINING



This cut shows our motor driven spiral gear saw table. No countershaft, no belts. Tilting or stationary tops. Write for circular and prices on our entire line. Address

**ALEXANDER DOODS CO.**  
451-453 Monroe Ave., N.W.  
GRAND RAPIDS, MICHIGAN, U. S. A.

## THE BEMIS STANDARD VISE

Fitted with a continuous, fast running double-thread steel screw, making it positive and quick. It will not slip, catch or let go. Buy of the Patentee-Beware of Infringements.

PRICES { No. 1, plain \$3.50  
          { No. 3, with dog, 3.75  
          { No. 5, with dog, 3.75

Send for descriptive circular.

**A. L. BEMIS**

71 Commercial St.

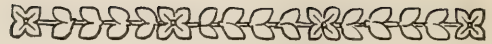
Worcester, Mass.

## Cushions, Spring Seats Upholstering Supplies

We issue price list which also contains valuable information for Instructors in Manual Arts.

It is free—write for it.

**DODGE-DICKINSON CO.**  
Bloomington, Illinois



## TRADE NOTES

(Continued from p. XXV.)

The May number of "*Simonds Guide for Mill Men*" contains several short technical items of interest to the general reader as well as to the woodworker. The following titles suggest the character: "Wood that Competes with Steel", "Silk Stockings from American Trees", "Kiln Drying of Green Hardwoods", "Handling Steel in Saw Teeth", "Checking the Shape of Resaw Teeth". Some of the foregoing items are quoted from other journals, credit being given in each case.

From the foregoing the conclusion is readily drawn that well-edited House Organs constitute a worth-while service to everyone in any way interested in the field represented. Readers of this Magazine would do well to request that their names be placed on the mailing list of our advertisers who issue House Organs.

To render more efficient service and distribution in the southwest territory, the Chicago Flexible Shaft Company has opened a St. Louis office in the Railway Exchange Building, in charge of Otto Bersch and Jack Stroman. Mr. Bersch was for many years connected with the Brown Instrument Company. Both Mr. Bersch and Mr. Stroman are capable metallurgical engineers and the benefit of their counsel and experience is available for interested users or prospective users of Stewart Furnaces in that territory.

## TURN YOUR SPARE TIME INTO MONEY

By representing this magazine while attending summer school. An especially attractive proposition is to be offered to one aggressive student in every school.

Apply at once before your school is taken.

Address, Business Manager

**The Manual Arts Press**

PEORIA, ILLINOIS





## BOOK NOTES

TWO new books were issued by The Manual Arts Press during the month of June. These were *Teaching Manual and Industrial Arts* by Griffith and *Elementary Forge Practice* by Harcourt. Both of these have come out just in time for summer classes.

Professor Griffith's book is primarily a textbook for normal schools and colleges giving courses for teachers of manual and industrial arts, but it is such a readable book and such a comprehensive discussion of the principles of teaching that it should be in the everyday working library of every teacher of the manual arts. The book is a pioneer in its field, but unlike many pioneer books it is a thoro and adequate treatment of the subject. It is the result of years of teaching the subject and practical experience in the teaching and supervision of the manual arts.

The book by Mr. Harcourt, also, is the outgrowth of experience and in response to a recognized need. When asked how he happened to write this book Mr. Harcourt said:

"Careful study of the textbooks on the market convinced me that the information which they contained was general rather than specific. Most of these books were not written with the idea of giving minute or detailed instructions, and the series of steps involved in the making of the projects were not shown in the drawings.

"My idea of a textbook that would be suitable for a beginner, or a man who had a slight knowledge of forge practice, was one which would give specific information or directions, together with detailed drawings for each project.

"As I have said, the books on the market did not contain this information. The result was, that when a student completed a project in less time than the other members of his class, he had to lose a considerable amount of time waiting for the instructor to give him the necessary personal instruction, before proceeding with the next project.

"With *Elementary Forge Practice* this waste of time is eliminated and the students complete the projects in a shorter period of time. By this means they are enabled to do a wider variety of work in the allotted time. It follows, of course, the more projects they are able to complete, the wider their knowledge and the greater their skill.

"*Elementary Forge Practice* was written from talks and demonstrations which I gave to the students in forge practice at Stanford University. I prepared notes for these demonstrations and had the students check them in order to secure their viewpoint. If the notes were not clear to them, we talked the matter over, and almost invariably some minor detail had been omitted.

"I made a set of forgings with the various steps as shown in the plates. From these a set of tracings was made. From the tracings and notes a syllabus was produced. This I used for two years. By this means I was enabled to make corrections or changes which seemed desirable before putting it into book form".

The first edition of this book was published by the author. The second and enlarged edition is the one just issued by The Manual Arts Press. Concerning the first edition several commendatory letters have been received. The following is one of them.

"My dear Mr. Harcourt:

After having used your text book, 'Elementary Forge Practice' for one year I have found it the most suitable for vocational forge work that I have ever used. It is a splendid work and fulfills all requirements. I feel that I could not do without it. I take pleasure in recommending it to instructors of forge work."

Yours truly,  
JOSEPH PETTY,

Forge Instructor, Technical High  
School, Oakland, Calif.

The following review of *Seat Weaving* by L. Day Perry appeared in a recent number of *Educational Handwork*, published in England:

"As is usual with our American friends of The Manual Arts Press, this production is on par with their other books in the matter of quality and style. It is printed, illustrated and bound in an excellent manner. Teachers have often been on the lookout for works of a more or less special and technical character, and this one on Seat Weaving is all the more welcome because it is attractive, and, what is more, authoritative. It is intended for advanced pupils, and explains the various processes of making cane and rush seats for chairs, stools, lounges, etc. It is clear in expression, lucid in detail and in every respect a book to be desired by those who wish to do this kind of work."

## Books for Summer Study

Advance Yourself during Vacation by  
Reading these Valuable Books

HANDWORK IN WOOD.....*Noyes*  
The best reference book available  
for teachers of woodworking..... 3.00

WOOD AND FOREST.....*Noyes*  
A comprehensive treatment of  
sixty-seven species of wood..... 3.75

DESIGN AND CONSTRUCTION  
IN WOOD .....*Noyes*  
The esthetic as well as the practical  
side of woodworking. Will  
help you do the same thing better.. 2.25

THE MANUAL ARTS.....*Bennett*  
Selection, organization and meth-  
ods of teaching.....\$1.20

HANDWORK INSTRUCTION  
FOR BOYS.....*Pabst*  
Philosophical and historical re-  
view of manual training..... 1.00

FURNITURE UPHOLSTERY FOR  
SCHOOLS .....*Johnson*  
Detailed, practical instruction tell-  
ing how to upholster new and how  
to re-upholster old furniture..... 1.00

CARPENTRY .....*Griffith*  
Complete textbook on frame house  
construction ..... 1.10

WOODWORK FOR SECONDARY  
SCHOOLS .....*Griffith*  
A comprehensive and complete  
textbook on woodworking for ad-  
vanced high school students..... 2.16

WOOD PATTERN MAKING.....  
.....*Purfield*  
Fundamental principles of pattern-  
making ..... 1.88

SEAT WEAVING .....*Perry*  
Detailed, practical instructions on  
chair caning ..... 1.00

Correspondence Invited

**THE MANUAL ARTS PRESS**  
PEORIA, ILLINOIS

## Consider for Adoption

### THESE TWO NEW TEXTBOOKS

#### ELEMENTARY FORGE PRACTICE

By **Robert H. Harcourt**

*Instructor in Forge Practice, Leland  
Stanford Junior University*

A faithful presentation of subject mat-  
ter and an excellent aid in teaching.  
Offers 40 problems ranging from a simple  
ring to rock drills. Each problem is il-  
lustrated by full-page drawings showing  
the several steps, accompanied by explana-  
tory text. Chapters on tools, materials,  
processes, etc. This is a new enlarged  
and revised edition of the book as former-  
ly published by the author. Price \$1.50.

#### ELEMENTARY MACHINE SHOP PRACTICE

By **T. J. Palmateer**

*Instructor in Machine Work, Leland  
Stanford Junior University*

THIS textbook has been developed thru  
successful teaching experience. It  
presents information about tools, machines,  
processes and materials, and outlines a  
course of problems. These problems have  
been selected with a view to giving to the  
student the maximum amount of informa-  
tion in the small amount of time usually  
allotted to this subject. The main object  
of the book is to bring the student with  
no previous shop experience to the point  
where he is able to do some real work.  
In press.

**THE MANUAL ARTS PRESS**  
PEORIA, ILLINOIS

# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.

WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City.

EDITORS FRANK M. LEAVITT Associate Superintendent Public Schools, Pittsburgh, Pa.

WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON.

Published monthly by The Manual Arts Press, 237 N. Monroe St. Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

The Manual Arts Press was incorporated July 19, 1909. The stock is owned by Charles A. Bennett, president; William T. Bawden, vice-president; A. M. Wolgamott, secretary; and L. L. Simpson, treasurer.

## CONTENTS

HOW INDUSTRY IS MEETING THE PROBLEM OF  
INDUSTRIAL EDUCATION ..... *George E. Meyers* 27

SUGGESTIVE COURSE IN PHOTOGRAPHY FOR EIGHTH  
GRADE (Illustrated) ..... *Louisa H. S. Lawton* 31

WOOD ENGRAVING IN A BOSTON SCHOOL (Illustrated) ..... 36

EDITORIAL REVIEW FOR THE MONTH ..... 39

The Spirit of the School Shop—Industrial Rehabilitation—Industrial Arts Museum  
Advocated—Dunwoody Institute to Cooperate With the University of Min-  
nesota—Work of the Forest Products Laboratory—An Investment, Not an  
Expense—After the Eighth Grade, What?—Newark to Have a New Voca-  
tional School Building—New Director for Federal Board for Vocational  
Education.

WASHINGTON CORRESPONDENCE ..... 44

The Next Step in Meeting the National Crisis in Education—Immediate Action  
Demanded—Objectives of the Educational Campaign—Half-way Measures  
will not Suffice.

IN FOREIGN COUNTRIES ..... 45

London Continuation School Curriculum—Education as a Factor in Industry—  
Practice in the Elements—Higher Training for Industry Needed.

PROJECTS, PROBLEMS AND NOTES ..... 47

Projects in Elementary Carpentry, Elementary Cabinet Making, Sheet Metal Work,  
Printing, Pipe Fitting and Machine Shop Practice—Effect of Oils on Strength  
of Glue in Plywood.

CURRENT PUBLICATIONS ..... 56

Field Notes—Trade Notes—Book Notes.

*This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.*

Entered at the Post Office at Peoria as Second-Class Matter. Copyright, 1920, The Manual Arts Press.





## FIELD NOTES

THE National Society for Vocational Education is expecting to hold its next annual convention at Atlantic City on February 24, 25 and 26. The date was fixed after it became known that the Department of Superintendence of the National Education Association is planning to hold its meeting at Atlantic City on the week beginning February 28. The arrangement whereby the meeting of the National Society is held one week previous to the meeting of the Department of Superintendence has proven helpful to both organizations.

### AROUND NEW YORK

NEW York City has an Advisory Board for Vocational Education, representing the local trades, industries, and occupations. It is composed of five members appointed for two years. The functions of the Advisory Board are to counsel and advise the Board of Education in all matters relating to training in the public schools for gainful occupations. The Board of Education provide the Advisory Board with the necessary office space and secretarial and clerical assistance. The executive secretary gathers and compiles whatever data relating to trades and industries may be required by the Advisory Board. Regular meetings of the Advisory Board are held once a month and special meetings whenever necessary at the call of the chairman. R. M. Burnham, chief coordinator, is acting temporarily as executive secretary.

Representatives of manufacturers, employers associations and organized labor have appeared before the Advisory Board at different times during the year, when questions in regard to establishing vocational training in various subjects in the public schools have been under discussion. There has been abundant evidence of a willingness on the part of all concerned to cooperate to the fullest extent in making possible the introduction of the right kind of vocational training in the schools. The Board has been in a position to obtain valuable advice and assistance from experts in various trades. All the members have given unsparingly of their time and attention to matters presented for their consideration, often at great inconvenience to themselves, in order that everything possible might be done to further the interests of vocational education in New York City. The members of the Advisory Board are as follows: Fred Al-

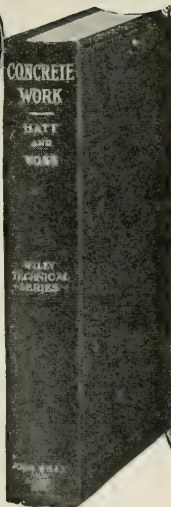
fred; Mrs. Sara A. Conboy, Secretary of United Textile Workers of America; E. J. Deering, International Association of Machinists; Samuel B. Donnelly, Secretary of the Building Trades Employers Association; John J. Munholland, Secretary of the Pattern Makers Association.

NEW YORK CITY provides two types of continuation school: General continuation schools or classes and industrial continuation schools or classes are compulsory; that is, all pupils between the ages of 14 and 18 who are working must attend a continuation school four hours a week. The industrial continuation schools and classes are not compulsory; they are all of the voluntary type and have been conducted in various manufacturing and industrial establishments during the past five years. The usual agreement has been for the employer to furnish rooms, light and heat and allow employees to attend the classes on company time without loss of pay. As the Board of Education pays only for the cost of instruction, it is evident that the employer bears the larger share of the expense.

During the period of the war there was a marked decrease in the registration and attendance in these classes which has persisted up to the present time. The chief cause for this condition as far as the employee is concerned seemed to be the rapid increase in pay in manufacturing plants, especially for overtime work. When the earnings of a mechanic are limited in the main by the number of hours he can work, he is not likely to turn his thoughts to opportunities for instruction in continuation classes. In addition, the labor shortage has developed a spirit of independence and restlessness among workers which has kept them moving from one place to another. Manufacturers have been forced to raise wages repeatedly in order to hold even mediocre help against competitors.

On the side of the employer there has been the necessity for finishing war contracts even after the signing of the Armistice. It has also been exceedingly difficult to provide accommodations in many factories because of the need for space for extra machinery and shortage of raw material.

In spite of the unfavorable condition, classes have been in session at the Brooklyn Navy Yard, Morse Dry Dock and Repair Co., Cortland Electric Co., Sperry Gyroscope Co., and



# AT LAST!

## A REAL VOCATIONAL TEXT ON CONCRETE

Ready September 1920

# CONCRETE WORK



By WILLIAM KENDRICK HATT, C. E., Director of Laboratory for Testing Materials, Purdue University, President, American Concrete Institute, and WALTER C. VOSS, B. S., Head, Department of Architectural Construction, Wentworth Institute, Boston, Mass.

This book teaches the student through the job. Being led through the work of reading blue prints, calculation of quantities, estimates of cost, selection and inspection of materials, selection and disposition of equipment, etc., he is given practice in doing the work of a local cement contractor or a foreman on a small job.

You will find it a real, live text, with a mass of usable information. It forms the basis for an entire course giving the student complete plans and specifications for a building. Have a copy of this book sent when published. Mail the coupon today.

About 329 pages, 5 $\frac{1}{4}$ x7 $\frac{3}{4}$ , illus. Cloth.

COMING SOON

## PRACTICAL TRADE MATHEMATICS

FOR ELECTRICIANS, MACHINISTS  
CARPENTERS, PLUMBERS AND  
OTHER TRADES

By JAMES A. MOYER, Director of Massachusetts, Department of University Extension, and CHARLES H. SAMPSON, Head of Technical and Mathematical Departments, Huntington School, Boston, Mass.

A trade mathematics text developed for the Massachusetts Department of University Extension, where the need was felt for a text on mathematics.

This book has been so written that it will hold the interest of the students, and presents only those parts of the commonly used mathematical subjects that the student is likely to need in his work.

About 150 ages, 5x7 $\frac{1}{4}$ , illus. Cloth.

## JOHN WILEY & SONS, Inc., Publishers

432 FOURTH AVENUE, NEW YORK

London: CHAPMAN & HALL, Ltd.

Montreal, Canada

Manila, P. I.

Renouf Publishing Company Philippine Education Co.

## HAVE YOU SEEN THESE BOOKS?

By R. BURDETTE DALE, M. E., formerly in charge of Vocational Courses in Engineering and Correspondence Instruction, Department of Engineering Extension, Iowa State College.

THE WILEY TECHNICAL SERIES.

J. M. JAMESON, Editor

### DRAWING FOR BUILDERS

Especially useful to the practical builder and to the ambitious young man who wishes to become an architect's draftsman. It will also be of service to carpenters, wood-workers and builders in brick and tile construction.

166 Pages. 8x10 $\frac{3}{4}$ . 69 figures and many plates. Cloth net \$2.50.

### ARITHMETIC FOR CARPENTERS AND BUILDERS

A short treatment of the subject of arithmetic as used in the daily work of the carpenter and builder; intended for the practical man as well as for the beginner and student.

231 pages, 5x7, 109 figures. Cloth, \$1.50 net.

### FREE EXAMINATION COUPON

JOHN WILEY & SONS, Inc.,

432 Fourth Ave., N. Y. City.

Gentlemen:—Please send me for 10 days free examination the books indicated below:

HATT & VOSS—Concrete Work. (When published)

MOYER & SAMPSON—Practical Trade Mathematics. (When published).

DALE—Drawing.

DALE—Arithmetic for Carpenters and Builders.

I agree to remit the price of these books within 10 days after their receipt or return them, postpaid.

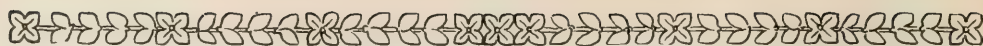
Name.....

School.....

Official Position.....

Address.....

MTM 8 20



## FIELD NOTES—(Continued)

the Richmond Light and Railway Company. Other companies have signified their intention of reopening or establishing classes as soon as conditions will permit. R. M. Burnham, in charge of industrial continuation classes, makes the following recommendation to the Director of Vocational Activities:

1. That some provision be made for training employees in factories where the number of applicants is too small to form a continuation class. This can be done by grouping employees in a school building.

2. That industrial continuation classes be organized as to trades and not according to age or educational qualifications.

3. That the number of students in an industrial continuation class be a maximum of twenty and a minimum of twelve.

4. That instruction for industrial continuation classes consist mainly of drawing, mathematics and science, with some English and citizenship.

5. That some provisions be made for training continuation class teachers. It is almost impossible to secure qualified teachers of industrial subjects.

6. That continuation class teachers be put on a yearly salary schedule instead of being employed on an hourly basis. These teachers could be assigned to a weekly program of work.

7. That advisory committees be formed for each trade in which instruction is given in continuation classes.

George J. Loewy, Director of Vocational Activities, begins his report on cooperative work in the high school with the following quotation from Richard Mulcaster:

"We must keep carefully that rule of Aristotle which teaches that the best way to learn anything well which has to be done after it is learned is always to be a doing while we are a learning."

Both Dr. Loewy and chief coordinator R. W. Burnham may well be pleased with the record of cooperative work in New York City. This city claims the distinction of having the largest cooperative course in the country, not only in point of numbers but also in the extent and variety of work undertaken. It has other claims to distinction in that it was the first city to introduce commercial cooperation work, the first to operate the alternate week plan of teaching salesmanship, and the first to start cooperation

with business houses at the instigation of the educational authorities, rather than at the request of business men, as has been done in other cities beginning this type of work in the public schools. So popular has this form of education grown among business men in the five years of its existence that there is no longer any need for the schools to request placement of pupils, as the demand exceeds the supply. The schools are now in a position to make a much more careful selection in placing pupils, and to insist that pupils be changed from one kind of work to another if the educational content of the work being done is likely to become exhausted.

Primarily the cooperative work is a plan of education based on the belief that a more practical training for business may be secured thru actual contact with the affairs of business life outside the school than can be gained solely thru a study of text-books or by classroom or laboratory experience. The aim is strictly educational in character and any outside work that does not lend itself to this aim should not be considered suitable for cooperative pupils. There has been a tendency on the part of some schools to let the high wages paid for routine work obscure the real object in placement work.

When cooperative work was introduced in the high schools a ruling was made that pupils must remain in school on full time for at least one year before being sent out on the alternate week plan. Following this ruling, pupils have been sent out in every term above the first year. Placement has been largely determined by two factors: (1) The age at which business men will employ pupils; (2) the nature of the work performed. As it has been found very hard to place pupils under sixteen years of age, they have been drawn mostly from the third and fourth year classes.

Industrial cooperative work for boys has been carried on in machine shops, power plants, ship building, printing, drafting, chemistry, and surveying. It is necessary for these boys to acquire considerable outside experience. Work in the industries should, therefore, be started at the beginning of the third year in most cases. The greatest difficulty has been in trying to arrange progressive work in the outside shops. The ideal of production in the industrial world is that the foremen are too busy to give any time to training employees. The industrial cooperative boy, therefore, gets only a chance to work under com-





# Starrett Books - Vol. II

"Look Here a Moment"

75¢

"If you had a copy of this book you could study a lot of these things out for yourself."

You remember how the instructor showed you the right way to set over that tail stock. But will you remember tomorrow? Will the next taper you cut be right?

## THE STARRETT BOOK FOR MACHINISTS' APPRENTICES

is an instructor you can consult at any time. 180 pages of the HOW and WHY of machine-shop practice. 22 tables of machine and drill speeds, tolerances, drill and tap sizes, etc. Red Athol leather binding. Size  $4\frac{1}{2} \times 7$ . Price 75 cents.

Get it at your hardware dealer's or order directly from us. Our Catalog No. 21 'EF' another handy book. Sent free upon request.

## THE L. S. STARRETT CO.

*The World's Greatest Toolmakers  
Mfrs. of Hack Saws Unexcelled*

ATHOL, MASS.

42-60



# Use Starrett Tools





## FIELD NOTES—(Continued)

mercial conditions without securing any specific instruction on his job. This means that the school must supply fundamental shop training before the boy is sent out to the commercial shop. This training must be continued by supplementary shop work in the school after the boy has been placed in an outside job.

The cooperative courses have met a very definite need by solving the problem of keeping pupils in school. Pupils with little training have had little difficulty in securing positions paying salaries far above those paid in normal times. A special effort has been made to influence pupils who apply for a discharge to remain in school on a cooperative plan. Many pupils have been saved to the school by this appeal. In two of the high schools doing cooperative work the majority of the pupils in the course have been recruited in this way. At the present time cooperative courses have been established in the following high schools: Buswick, Commercial, Julia Richman, Manual Training High, Marns, Newton, Stuyvesant, Washington High, Erasmus High, Bay Ridge, and Theodore Roosevelt. These schools have fourteen coordinators and there are 798 pupils enrolled—225 boys and 543 girls.

—W. H. Dooley.

### IN BOSTON

WITH the advent of a nominal peace in the affairs of the nation has come a slight relaxation from the intensity that has so completely characterized educational and business activities for several years past. It is evident, however, that many of the plans adopted for war time purposes have left behind purposeful and valuable suggestions which will greatly influence educational matters for years to come. The various types of vocational and industrial work administered in school systems thruout the country will give ample evidence of these influences, and much will be accomplished that will help maintain the real importance and value of such types of education, so amply demonstrated during the world war.

The schools of Boston have contributed their share of cooperative effort right up to the present without interruption, and in March of 1920 there were shipped thru the Red Cross to French and Belgian refugees a considerable quantity of tables and chairs. A noteworthy feature of this shipment is the fact that nearly all of the work involved was completed by the pre-

vocational schools, and by boys of comparatively small size. There has been a remarkable exhibition of keen interest, concerted effort and cheerful, eager work on the part of those boys at all times. Their product was up to required standards of good workmanship and it was disposed of with promptness that earned the commendation of the Red Cross authorities.

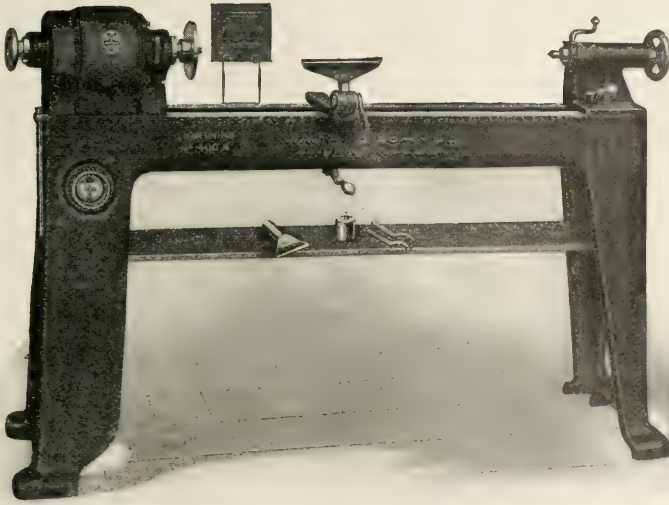
More recently the schools have completed an order for the Department of Physical Training which called for a considerable amount of summer playground apparatus, such as bean bag boards, tether ball bats, bulletin boards, etc. It is not the completed article alone that has gained commendation for the boys, but the interesting correlation work that has been carried on with the shop or productive work. After all, it is real worth-while education that is being striven for, and the various activities represented are but a means toward the end desired. When boys become acquainted with the "interest factor" as evidenced in a study of source of material for a given task, commercial routing of such material to place of manufacture, market prices concerned, per cent of profit over actual cost to be allowed, etc., the problem of interesting them in arithmetic, industrial history, commercial geography and other subjects has been greatly simplified as to administration.

A new curriculum is now being formulated for use in elementary and prevocational schools in Boston, and in both cases strong emphasis will be placed on practical problems, home mechanics and types of work which by their very nature induce a healthy interest in the work of the school. Such a condition will, in turn, result in a more pronounced interest in academic work related thereto, and the important problem of retaining pupils in school until grounded in necessary fundamental principles ought to be made somewhat easier.

—Francis L. Bain.

### SEATTLE SCHOOL GARDEN

LAST YEAR the Seattle School System ranked as one of the two highest in the country in School Gardening. The 42 schools taking part in the garden campaign brought about rather astonishing results. There were six thousand gardens which produced \$60,000 worth of garden truck. Forty-two exhibits of the school garden products were held. A motion picture film, showing our garden methods, was made by a film company, and is being used in the school garden campaign.



# DEPENDABLE SHOP EQUIPMENT

IS ABSOLUTELY ESSENTIAL IN YOUR SCHOOL  
TO MAKE YOUR MANUAL TRAINING  
CLASS A SUCCESS

The No. 400 "LIGHTNING" Manual Training Lathes are especially designed for use in vocational, industrial and manual training schools.

These Lathes are simple to adjust and easy to operate, and can be used by the beginner without fear of accident, as they are absolutely "fool proof".

FAY-EGAN Lathes are from 300 to 500 pounds heavier than the ordinary lathe, making them stand up longer under rough usage.

## J. A. FAY & EGAN CO.

Established 1830

730-750 W. FRONT ST.

CINCINNATI, OHIO





## FIELD NOTES—(Continued)

This year there are 58 schools active in garden work and the garden teaching force has been doubled. Fifteen tons of seed potatoes have been furnished to the children at wholesale cost and 10,000 packages of government seeds have been distributed free of cost. Surely H. C. L. will get a jolt.

AT A RECENT MEETING of the New England Vocational Guidance Association the following officers were elected: Frederick J. Allen, Harvard University, president; Frank V. Thompson, superintendent of public schools, Boston, vice-president; Lewis E. Maverick, Harvard University, secretary; and Miss Rebecca Anslow, of the Trade School for Girls, Boston, treasurer. Miss Susan J. Ginn, director of vocational guidance in the Boston schools, was appointed to serve on the executive board for three years.

THE JUNE bulletin of the Western Arts Association contains the president's appeal for united and energetic effort for a great meeting in 1920. With a centrally located city for the meeting place, this ought to be accompanied without serious difficulty.

TWENTY-FOUR instructors in vocational schools in Western Massachusetts have formed a permanent association. The officers elected for the coming year are: President, Charles B. Rose, Springfield; vice-president, John Shea, Westfield; secretary and treasurer, Peter Mason, Holyoke; directors, G. A. Burrridge, Springfield, C. Berry, Holyoke, Chester Derby, Westfield, F. Osborne, Northampton.

THE NEW CONTINUATION SCHOOL LAW in New York State will make it necessary for New York City to provide part-time continuation classes for 20,000 boys and girls this coming September. The law will not be in full force thruout the whole state until 1925, at which time provision must be made for approximately 100,000 pupils in continuation classes.

THE FIRST state institute on vocational and industrial education was held in Providence, R. I., the latter part of June. There were about twenty-five instructors present. Irving C. Perkins, state supervisor of industrial education in Rhode Island conducted the institute. Among the speakers present were Professor John M. Brewer, of Harvard University, and Professor Arthur D. Dean, of Teachers College.

A COUNTY VOCATIONAL SCHOOL is to be opened at Berrysburg, Pa., next September. Several school districts in Dauphin County are uniting to support the school which is the first school of its kind in the county. The vocational school will take the place of the present Berrysburg high school.

THE BOARD OF EDUCATION of Los Angeles, California, has awarded the contracts for a new building for a boy's vocational high school in that city.

In a recent address before the Rotary Club of Pittsburgh, Pa., Professor Frank M. Leavitt, associate superintendent of schools in charge of industrial training, urged that business houses and factories use the administration office of the board of education for securing qualified employes. Mr. Leavitt said:

"The public schools have become a vast employment bureau; today we have requests from 200 boys who are seeking employers. The employment division is placing each week as many as 100 persons between the ages of 14 and 21 in occupations for which they have been fitted by special, technical and continuation courses of the public schools. We are standardizing the output of trained boys and girls and we are labeling it. We must know where the student is going and the business men and manufacturers can help us by making use of the opportunities the public schools bring them."

Upon the opening of schools this fall a course in retail selling is to be offered to high school pupils in St. Paul, Minnesota. Miss Margaret Selby, a graduate of the Prince School of Salesmanship, Boston, will have charge of the classes. Two afternoons a week and all day Saturday will be given to practice work in the stores at a minimum wage of \$2.00 per day for juniors and \$2.25 per day for seniors.

Governor Coolidge, of Massachusetts, has appointed a special committee to investigate the advisability of establishing a trade school in leather chemistry.

The School Committee of Lowell, Mass., recently voted to request the municipal council to purchase one of the mills of the Bigelow-Hartford plant to be used for vocational school purposes and to equip it by September 1.

# Manual Training Magazine

AUGUST, 1920

## HOW INDUSTRY IS MEETING THE PROBLEM OF INDUSTRIAL EDUCATION<sup>1</sup>

GEORGE E. MYERS

Professor of Industrial Education  
University of Michigan

FIVE years ago, while connected with the New York city school system, I visited every industrial establishment in greater New York which employed twenty or more children under sixteen years of age. As a representative of the city board of education I proposed that, if these boys and girls were excused from work four hours per week and a place provided by the company for classroom purposes, the board of education would send a suitable teacher to the plant and provide the supplies necessary for carrying on instruction. We offered to give such instruction as was related to the industry in which these children were employed, and to make the instruction as valuable as possible in preparing the young workers for more responsible positions. Further, we proposed to supervise the teacher's work in order to make sure that it accomplished the purposes for which it was organized. Notwithstanding this generous proposal on the part of the board of education not a single company accepted the arrangement. Several managers of plants expressed their willingness to do this if all of the other companies engaged in the same work did so, but the general attitude was that a company could not afford to release young workers from employment four hours per week for educational purposes even tho the cost of instruction was borne by the city.

A few days ago at Akron, Ohio, Goodyear Hall, an educational and recreational building costing \$3,000,000, and paid for entirely by the Goodyear Tire and Rubber Company was dedicated. Three entire floors of this immense building are occupied by the Goodyear Industrial University. This institution gives courses of all grades from elementary English for foreigners to the usual University post-graduate subjects. Classes are in session from 7:00 o'clock in the morning until 11:00 o'clock at night, and more than 5,000 employees of the Goodyear Company are registered as students. The salaries of more than fifty teachers and all other costs of instruction are paid by the company. A large number of the students attend classes on company time, or in other words receive pay at the usual rate while receiving instruction.

This, contrast, striking as it is, is fairly typical of the change that has come in the attitude of industry as a whole towards industrial education in recent years. On every hand there is evidence that industry is now considering, and considering seriously, the problem of training industrial workers. The war, with its tremendous demand for skilled workers and with its surprising results from relatively brief periods of training, hastily organized, taught industry the necessity of this. And conditions since the war have only served to emphasize it.

<sup>1</sup>Paper read before the Vocational Education Round Table, Western Arts Association, Detroit, May 1920.

But let us examine more carefully how industry is meeting this problem:

1. *Industry is trying to find out what is needed.* Leaders in industry have long known that trained officers are necessary and have selected for the more responsible positions men who have come up in the plant thru a long period of training with constantly increasing duties and responsibilities. For years past some companies have gone out to our engineering colleges and have selected the best trained graduates they could obtain only to put them thru further long and arduous training in the plant in preparation for important positions.

Also the managers of some industrial plants have realized that they must do something to keep up their force of highly skilled mechanics—tool makers, machinists, dye sinkers, pattern makers, etc., and have given their support to various efforts to accomplish this result.

At the present time, however, industrial employers are thinking far beyond the training of the more responsible officers and the highly skilled mechanics. They are trying to find out what training the foremen, those non-commissioned officers of industry who have been promoted from the ranks, need in order to reduce labor turnover and to get the best results from their men. The growth of interest in foreman training and the extent to which industrial companies are seeking information as to what should be done along this line are astonishing to one who has not kept in close touch with these movements. Again, industrial employers are asking what training the semi-skilled operative needs when he is taken into employment, and what further training he needs when he is transferred from one department to another. They are considering the training needs of unskilled workers, and especially of foreigners, in order that the morale of the entire

force of workers may be kept at its maximum.

In fact, industry is facing today as it has never faced in the past the problem of training its entire personnel. And it is seeking as it has never sought before to find out just what training is needed by every worker in the entire organization.

2. *Industry is trying to find the best way to provide what is needed.* Different corporations are approaching this matter in different ways, but all over the country progressive companies not only are trying to find out what is needed but also to work out an organization, or to support one already built up, to supply the need. Some of the efforts along this line have already been suggested by what I have said. Here are five that seem to be most significant:

(1) The vestibule school conducted in the plant by the company. The purpose of this school, as its name implies is to help the new worker over the threshold of his job. Its place is in those occupations which can be mastered in a relatively short time such as semi-automatic machine operating, the simpler assembling and inspecting. As we all know, the vestibule school was particularly useful in training women for work in munition plants during the war. For several months such a school in the Packard Motor Car Company's plant had 200 women in regular attendance, each woman taking two weeks of training on pay before becoming a regular worker on liberty motors for army airplanes. But this type of school has survived the war and has become recognized as a permanent and important means of training the class of workers for which it is suited, both men and women, in the larger industrial establishments.

(2) The up-grading school is for improving the work of those already em-



ployed in the plant or for preparing them for new responsibilities. It may be conducted by the company or by the public schools or by some other agency. We are concerned with it here, however, only in so far as industrial establishments use it. Many large companies have found that the up-grading school supplements the vestibule school, and have been led from the establishment of the one to the development of the other, usually under the same management.

(3) Apprenticeship in the highly skilled trades still appeals strongly to industry and many large plants maintain schools for apprentices with definite periods for technical instruction and more or less careful supervision over the shopwork done by apprentices. Some of the plants are looking to the public schools to provide the technical instruction, and in Wisconsin, largely thru the initiative of industry, legislation has been enacted requiring apprentices to attend classes provided by the schools.

(4) The organization of training departments in industrial establishments is probably the most significant step yet taken by industry in meeting the problem of industrial education. Training departments not only provide the organization for carrying on such educational work as the management may consider desirable. They provide an organization whose business it is to study the whole training problem for the entire company, to analyze the different jobs performed in the plant and determine what training is required for each job, to work out a comprehensive program and to "sell" this program to the management. The organization of such a department in any industrial establishment, with a capable and high-salaried man in charge who has authority commensurate with his salary, means that the plant intends to make a business of industrial education, the same

as it does of buying materials, and selling products. When this condition becomes general, industrial education will have arrived. And this is the direction which industry's attack on the problem is taking.

It does not follow, as some may infer, that public industrial education will suffer from this arrangement. Training departments should and do work in co-operation with public vocational schools. They encourage their men to take public evening school courses, they are in position to see that credit toward promotion is given for such work, to arrange with high schools for cooperative high school courses if these prove desirable, to assist the schools in many ways in meeting the needs of compulsory part-time education, etc. If training departments accomplish their real function they will provide in the plan such training as is not already available in satisfactory form, or can not readily be made so available, and they will strongly support public industrial education on every occasion. Besides, there are many more workers employed in relatively small plants than in plants which are sufficiently large to maintain training departments comprehensive enough to meet the needs of all employees.

(5) Industry is planning a great national industrial and commercial university. The National Association of Corporation Schools, representing one hundred and fifty of the principal corporations engaged in training their employees, is responsible for this movement. To quote the Association's announcement: "The purpose of the university will be to make investigations and to conduct courses designed to train efficient executives in all of the departments of the field of personnel relations in industrial and commercial life. In this field will be found employment, training, thrift, profit-sharing, cooperative manage-

ment, health and safety, welfare, and all other activities which relate to the best interests of employees, as well as management, and of the employers."

While this institution seems to be primarily for officers of industrial and business enterprises, it has great possibilities as a means for the study of industrial education problems since it would have free access to many of the largest industrial organizations; and it would probably prepare men to take charge of and to instruct in training departments.

So far we have considered only the employer side of industry. If our discussion is to be comprehensive we should also take account of the employee side, and ask ourselves how labor is meeting the problems of industrial education. There is time today to discuss this only very briefly.

We are all aware that workers in large numbers are taking advantage of opportunities for adult education, whether offered by corporations or by the public. One sixth of the Goodyear employees are enrolled in the Goodyear Industrial University. Six thousand employed workers are enrolled in part-time and evening classes in the Cass Technical High School of Detroit, and most large cities have evening industrial school work on a large scale.

Again, it is well known that labor organizations as a rule stand strongly for the development of industrial education, especially under public supervision and control, insisting only that it shall be based upon a careful survey of community needs and shall not serve as a means to create an over supply of skilled labor. The American Federation of Labor has gone on record again and again in favor of part-time and evening industrial schools.

There is, however, another educational

movement among labor organizations, newer and less well known, which I wish especially to stress today. In Great Britain it is known as the Tutorial Class Movement. In this country work of similar character, tho as yet with aims less clearly defined and still poorly organized, goes by a variety of names. In Boston it is called The Trade Union College.

The Tutorial Class Movement originated in a conference called by the Worker's Educational Association at Oxford University in 1907. A committee of University representatives and representatives of labor organizations drew up the original plan. Since then every University in England and Wales has taken up tutorial classes as part of its normal work, each university having its joint committee nominated by the Worker's Educational Association to deal with all matters relating to these special classes. They are, of course, extension classes. The course covers three winter sessions of 24 weeks, one session of two hours each week, a total of 172 hours. Each student agrees to attend the entire course. In 1918-19 there were 3,783 students, 1,685 of them women, enrolled in the tutorial classes. The subjects studied include economic history, economics, political history, political science, sociology, psychology, philosophy, biology, ethics, English literature, geography and natural science. In addition to the three-year tutorial classes several hundred one-year classes in the same subjects are maintained.

The Trade Union College of Boston, only a year old last month, gives courses in English, history of trade unions, shop committees and collective bargaining, history of the freedom of labor, labor administration, history of labor in America, representative government, theory and practice of democracy, economics, the distribution of wealth and

physics. Similar colleges have since been organized or are planned in several other American cities including the national capital.

It is fair to ask what the English Tutorial Class Movement and the American Trade Union College have to do, or are likely to have to do, with industrial education. Do they not deal rather with purely non-vocational subjects?

We are in danger of interpreting industrial education too narrowly. We have been too ready to think only of manipulative skill and technical knowledge when we talk of industrial education. We have left out of account the worker's group consciousness and re-

sponsibilities, his attitudes of mind, his reactions to economic conditions which press upon him but about which he knows little or nothing. Even from the point of view of the economic efficiency of labor, to say nothing of other more fundamental considerations, these factors must be considered in a comprehensive program of industrial education. It is fortunate indeed that labor organizations are calling to their aid able and fair-minded instructors from the colleges and universities in this work and it is to be hoped that a permanent and mutually helpful relationship may thus be brought about between our higher educational institutions and labor.

## SUGGESTIVE COURSE IN PHOTOGRAPHY FOR EIGHTH GRADE

LOUISA H. S. LAWTON

Instructor Industrial Arts, Park School  
Buffalo, N. Y.

**I**N VIEW of the tremendous commercial use made of photography, its almost but miraculous use and development during the war, and the steadily awakening interest in photography as an art, it seems appropriate and reasonable to urge the introduction of such a simple course as is here offered into public as well as private schools.

This course is the result of actual experience in teaching photography to the eighth grades in the Park School, Buffalo.

It has been successful beyond my expectation, especially from the standpoint of eager interest, an appreciation of the art aspect, and the real need which is filled by commercial, scientific and pictorial photography, and in the development of judgment in regard to all pictures. This was definitely shown in the class discussions during which forceful arguments were advanced in support of statements made both as favorable or

unfavorable criticisms. Fine points of distinction were made which showed a real grasp of principles; and incidentally, considerable skill was acquired in developing plates and films, and proofing and printing with gaslight papers in our dark room practice.

The cost of equipment can range from \$50.00 to \$200.00, and the maintenance expense can be as low as \$40.00 per year and much be accomplished.

As in any well taught subject, the teacher must be an enthusiast in order to instill that genuine love for the subject which all artists have.

### OUTLINE OF COURSE

The object of this course is threefold:

1. To create a love for good pictures thru a first-hand knowledge and appreciation of what constitutes a good picture.
2. To open up the wonderful possibilities of real photography, and to create a dissatisfaction with the popular push-the-button, snap shot you do the rest attitude of so many people.



3. To give a practical working knowledge of:
  - a. The structure and proper handling of plate cameras (4"x5" and 5"x7" being considered the best sizes for this work) and kodaks.
  - b. Focusing with ground glass and finder.
  - c. Composition of a picture.
  - d. Developing plates and films—tray and tank methods.

### 3. The Camera—

- A. Lens—attached to "front board."
  1. Function.
  2. How ground, reason for shape.  
Illustrate by diagram of human eye for focusing.
  3. Why the image on the ground glass is inverted.



"REFLECTIONS"—TAKEN BY A MEMBER OF THE CLASS

- e. Proofing—blue-prints, regular proofing paper.
- f. Gaslight printing—Velox, Azo, Cyko, etc.
- g. Construction of simple dark-room.
- h. Convenient arrangement of the necessary equipment.

This course is designed for one period of two hours per week. Much field work is done and the work of each student carefully criticized by the class.

An exhibition of photographs is begun with the first pictures completed, i. e. taken, developed and printed by the class, and grows as the work develops thruout the year.

### LESSON I

Discussion and demonstration of:

1. The tripod—
  - A. Construction.
  - B. Rigidity requirement—lightness and compactness.
2. Premo, 5x7 plate camera or kodak.

### B. Shutter—

1. Function—to admit light to plate during exposure.
2. Structure—device just back of lens which can be operated by means of springs and lever so as to admit or shut out light according to different fixed speeds.  
Demonstrate.

### C. Diaphragm—

1. Function—to control the size of the lens opening.
2. Structure—device of sliding parts so arranged as to make a round opening of graded sizes.  
Demonstrate different stops and explain the use of each and the difference in light control and definition.

### D. Front board—

1. Function—to hold lens.
2. Fitted with rising front.

## E. Rack and Pinion—

1. Function—to adjust distance between lens and “focusing screen” or “ground glass.”

## F. Bellows—

1. Function
  - a. Excludes all light.
  - b. Allows easy adjustment of position of lens.
  - c. Allows for use of swing back.
  - d. Allows for closing camera into a small compact space.

## G. Focusing Screen (ground glass of camera—finder of kodak)—

1. Function—to show the image.
2. Position of image on screen.
3. Size of image.



INDOOR PORTRAIT BY MEMBER  
OF THE CLASS

## Structure of Focusing Screen

- a. Fitted into a light frame so it may be removed and changed from a vertical to a horizontal position.
- b. Springs and opening for inserting plate holder so the plate will be held in the exact position the ground glass was in when focusing.

## H. General frame of camera—

1. Advantage of folding camera.
2. Rigidity of construction.
3. Materials exactly suited to needs.
4. Perfect workmanship.

## LESSON II

## REVIEW “THE CAMERA” (Lesson I)

1. Experiments in focusing—getting used to seeing the image inverted.

2. Each pupil should go thru the manipulation necessary in taking a picture, even to inserting the plate holder and giving the exposure required. This helps to overcome awkwardness in handling tripod, camera and plate holder when really taking a picture.



INDOOR PORTRAIT BY MEMBER  
OF THE CLASS

## LESSON III

## FIELD WORK

Selecting subject—careful consideration of:

1. Composition—using ground glass in camera; card board device for kodak.
2. Light effect.
3. Exposure—use of Wellcome Diary Exposure Table or other similar exposure meter. Always err on the side of over rather than under exposure.

Record made in Wellcome Diary or on sheets printed for the purpose.

Sample Record:

Subject.....	Park School grounds
Light.....	Very dull
Stop.....	8
Exposure.....	$\frac{1}{2}$ "
Plate.....	Cramer Crown
or	
Film.....	Eastman Standard

In case of inclement weather, substitute simple indoor portraiture for the usual field trip.

## LESSON IV

## DEVELOPING PLATES OR FILMS

## Demonstration:

## Tray Method:

1. Preparing the dark room.
2. Mixing developer and hypo.
3. Removing plate from holder.
4. Immersing plate in developer, and gently rocking tray.
5. Flashing up of image.
6. Developing until image shows thru on glass side of plate.
7. Dipping plate in water and placing in hypo.
8. Fixing in hypo 15 minutes.
9. Examining plate to see if development was correct.
10. Washing plate in running water for half hour.
11. Drying plate in rack or by means of an electric fan in a place free from dust.

## Tank Method:

Follow directions accompanying the tank.

## LESSON V

## TAKING A PROOF

Using Kresco—(Mill Run Pense)—blue-print paper.

## Procedure:

1. Handling of printing frame.
  2. Handling of glass plate or film.
    - A. Film side next to film side of paper.
    - B. Dusting (slightly jarring plate against edge of table or brushing with a fine, wide camel's hair brush).
  3. Exposure to sunlight or Cooper-Hewitt light.
    - A. Determined by examining half of the print while it is printing.
      - a. For untuned proofs print to bring out all the possibilities in the plate.
      - b. For tuned proofs print much darker than above.
  4. Toning prints.
    - A. Kresco—in solio solution as per direction on bottle.
- Blue-prints—in water.

## LESSON VI

PRINTING—VELOX PAPER, AZO, CYCO, ETC.

Dark room. Arrange trays and printing frame, etc.

## Procedure:

1. Mix developer and fixing bath.
  - A. Developer—Dissolve one tube of M. Q. in 8 ounces water in tray.
  - B. Fixing bath—Dissolve 2 ounces crystal

hypo in 8 ounces water in tray, or mix Eastman's acid fixing bath as per directions.

C. Basin of cold water for washing.

2. Arrange in a convenient way:

A. Printing frames.

B. Trays.

C. Plates or films to be printed.

D. Printing paper.

E. Basin of cold water for washing prints.

## Process—Printing:

1. A. Place plate in frame, film side up.

B. Place paper on plate, film side to film side.

C. Expose according to density of plate.

1. A thin plate needs a short exposure—5 to 15 seconds.

2. A thick plate needs a longer exposure—15 to 90 seconds.

2. Developing:

A. Slide paper into developer *face side down* as quickly as possible to avoid uneven developing and air bubbles.

B. Turn picture over after it is thoroly immersed and develop until right tone is obtained. Rock tray slightly.

C. Remove print and plunge in water quickly so as to stop further development.

D. Place in hypo bath and leave for 20 minutes.

3. Wash:

Wash print in running water for 30 minutes.

B. Place on clean cardboard to dry, or hang on wire by means of spring clips attached to one corner of print in a place free from dust.

## LESSON VII

## CLASS WORK

Composition—What makes a good picture?

Use pictures taken on field trip in illustration, and others selected to bring out points discussed.

1. Simplicity of subject:

a. Avoid crowding.

b. Avoid *two* objects of equal interest.

## LESSON VIII

Composition (Concluded)

Divisions of a picture:

1. The foreground.

2. The middle distance.

3. The background.

1. Foreground:

Definition: That part of the picture which is nearest the observer.



- a. The interest of the picture should nearly always *center* here.
- b. Should be strong, emphasized.
2. Middle distance:
 

Definition: The part of the picture which lies between the foreground and background.

  - a. Should merely connect the foreground with the background.

## SUPPLEMENTARY BIBLIOGRAPHY

Hoadley. Elements of Physics.

Newell. Inorganic Chemistry for Colleges.

## OUTLINE OF SUPPLEMENTARY COURSE

This course may be given at the end of year, after a certain degree of skill has been acquired, or during the course as outlined above at the discretion of teacher.



A PHOTOGRAPH OF PHOTOGRAPHS, MATERIAL AND WRITTEN MATTER  
MADE BY THE CLASS IN THE STUDY OF FLAX

3. Background:
 

Definition: The far distance view in the picture.

  - a. Used to help the story.
  - b. Should make an appropriate setting.

## BIBLIOGRAPHY

Clute, Fayette J., The A B C of Photography.  
Burke & James, Inc., Chicago, (very good).  
Photo-Miniature Series (Tennant & Ward, 103  
Park Avenue, N. Y.)  
No. 105 Correct Exposures.  
No. 140 Lens Facts.  
No. 158 Photographic Apparatus Made at Home.  
Poore, Henry R., Pictorial Composition.  
Story, A. T., The Story of Photography. D.  
Appleton & Co., 1904. (Historical background).  
Watkins. Manual of Photography.

## Justification:

- (1) Commercial importance.
  - (a) Newspaper photography.
  - (b) War photography.
  - (c) Illustrations of scientific investigations.
  - (d) Recording events.
  - (e) Moving pictures.
- (2) Correlation with art principles.
- (3) Pictures perpetuating school events and activities.
- (4) Pleasure derived from ability to use a camera.

## Subject Matter:

- A.(1) Early history of photography.
  - (a) Contrast the early equipment with the small modern kodak, with which almost every one is familiar.

- (b) Successive inventions, etc.
- (2) The modern photographic equipment:  
Uses: (a) Commercial.  
      (b) Pleasure.  
      (c) Art photography.
- (3) The Development of Commercial Photography:  
      (a) For advertising purposes.  
      (b) For reproductions for newspapers and magazines.  
      (c) Photograph studios.
- (4) Physics of photography:  
      (a) Light.  
      (b) Images.  
      (c) Reflection.  
      (d) Lenses.
- (5) Chemistry of photography:  
      (a) Chemical composition of coatings on plates and films.  
      (b) Chemistry of developing process.  
      (b) Chemistry of developing processes.  
      (c) Chemistry of printing-out papers.

#### B. Processes:

- (1) Analysis of camera.  
Fundamental Principles of:  
      (a) Kodak.  
      (b) Plate camera.  
      (c) Correct methods of handling each.
- (2) Arrangement or *composition* of pictures, as to  
      (a) Light.  
      (b) Distance from camera (size).  
      (c) Background.  
      (d) Effect of colored clothing, draperies, etc.
- (3) Exposure:  
      (a) Study of diaphragm and shutter.  
      (b) Speed tables,—seasonal variations.  
      (c) Instantaneous exposure.  
      (d) Time exposure.
- (4) Development of film or plate—negatives, positives.
- (5) Printing: developing and fixing prints.  
      (a) Sun printing—blue-prints, solios, etc.  
      (b) Gas light printing—velox, azo, etc.

### WOOD ENGRAVING IN A BOSTON SCHOOL

JOSEPH B. EGAN

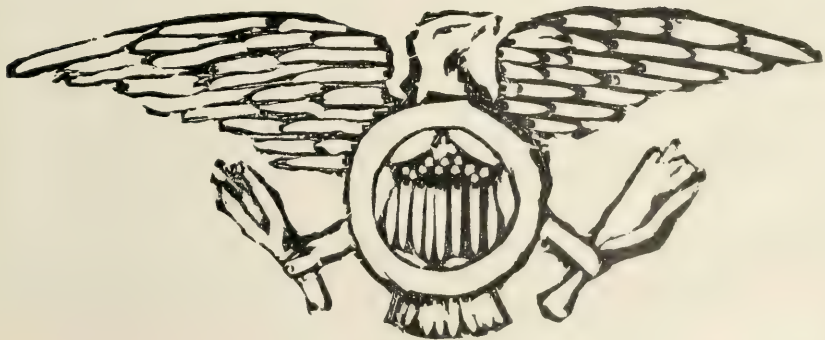
Principal of Howard School, Charleston District  
Boston, Mass.

WOOD engraving was begun in the Harvard School six years ago. We originally bought the wood, but later, when the price went to two cents an inch, we began to prepare our own blocks. We have found gum wood the best for the purpose on account of its softness. Maple, while permitting a higher finish, is too hard to work into desired sizes. An ordinary iron mitre box is all that is required.

The practice now is to allow each child to prepare his own block—cutting, facing, glueing and polishing; all this is very good work, involving accuracy, patience and intelligence. We find the children go thru the preliminary work with great eagerness, since the incentive of actually cutting a picture on it is before their minds. It is the old story of something to do, with utility as the mainspring of action.

Once the block is prepared, the child submits it to the instructor for approval, and with it the design that he wishes to reproduce. This design is sometimes, tho not as often as we would like, the result of his own creative effort. More often it is a tracing more or less adapted to present needs. If the design is satisfactory it is traced on the block with carbon paper, and later, lightly retraced with ink. The ink raises the grain some so that a light refinishing is necessary. We found that pencil marks were not permanent enough and that the pressure of the pencil produced furrows that interfered with proper printing.

Once the design is properly transferred to the block, the child is issued a tool and told to report at the class which meets the first hour every Wednesday morning. His class work must be very



EXAMPLES OF STUDENTS' WORK IN WOOD ENGRAVING



satisfactory to gain this permission from his teacher.

The block is set in the vise and cutting proceeds, in the case of the beginner, very slowly. It is surprising the pains that a child will take to cut away bit by bit the wood that is not needed in an intricate design. If we could get him to work as hard and well at his arithmetic we would do wonders. Moreover he never seems to tire.

When the design is cut to the satisfaction of all concerned it is carried down stairs to the press-room and several prints made. The press is a very necessary part of this work. It provides the ulti-

mate reason for the whole preformance, showing the result in print. the magazine, blocks are cut for Christmas cards, calendars, alphabets, animals for use in the primary grades and any other purpose that need brings forth. The cards are particularly interesting since they are printed on a good quality of card and then hand colored by the



BLOCK CUT BY PUPIL

mate reason for the whole preformance, showing the result in print.

Out of the hundreds of blocks that are cut a number are selected each month for reproduction in our little magazine, *Child's Work*, which, by the way, lives up to its name.

This is the crowning glory for the successful boy or girl, for the girls do actually more engraving than the boys.

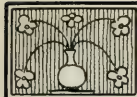
In addition to work done primarily for



HALFTONE FROM PRINT IN  
SEVEN COLORS BY PUPILS

members of the upper grades. Some very handsome pieces of work have resulted.

So far as I know this is the only attempt in the United States to make wood engraving a part of the school life. Moreover I think *Child's Work* is the only children's magazine illustrated by original wood engravings. The possibilities of the subject are tremendous and only need the stimulation which proper recognition could give to produce results in abundance.



## EDITORIAL REVIEW FOR THE MONTH



### THE SPIRIT OF THE SCHOOL SHOP

**I**N THE month of August when the vacation is at its height is just the time to read "The School Shop" by Edward Yeomans in the June number of *The Atlantic Monthly*. It is written in the latest moving-picture style, full of pep and poetry. In fact, it goes so fast that you may want to have the reel repeated. Fortunately, it is easier to do this while reading *The Atlantic* than when watching a "movie" in the theatre.

The article places before the general reader in picturesque language a vivid ideal of manual training work in an elementary school shop. I say *an* ideal, because it is not yet the accepted ideal, and may never be, but it is an ideal that has in it desirable elements so often lacking that their presence in full measure is a rarity. This ideal uses the school workshop not fundamentally as a place to learn the technic or processes or historical setting of industry, but as a center of free activity in making more real the lives and the environments of men—Nansen and Amundsen, Scott and Shackleton, Captain Smith of the Titanic, Christopher Columbus, and other sea-faring men of note. The editor has recognized this in using the subtitle, "An Adventure in Reality" on the cover page. Boats and houses are the material products—boys like to make boats, and, he says, girls like to make houses better than anything else—but he makes it clear that these are merely incidental in a process of character training and knowledge getting by opening the door to literature and science and art and life thru the activities of the school shop.

It would be easy for a teacher of manual arts to find fault with the article if it were viewed from the standpoint of a working scheme for all schools. The teacher who

has found electric motors and wireless telegraphy as interesting and profitable as boats may call the article a water-craft rhapsody, but let him put the same kind of connections with life and human emotion into his motors, and the author will approve of the motors.

One may honestly doubt whether a boy in making a locomotive is necessarily at the same time becoming "honest to the core", but he will recognize that the workshop as well as the literature class, and the science laboratory offers opportunity for moral training and that the true teacher in the workshop has greater opportunities for moral training than in most other departments—probably all other departments—because he has the active assistance of materials which change form readily at the will of the worker. As the author says, he has, also the square, the level and the plumb-bob, which he aptly calls the "judges of manual righteousness", but science and mathematics each has its equivalent. It should be enough to say that the school workshop, as such, provides opportunity for moral training equal to that of any other school department, for we know that the workshop may be, and usually is, more interesting to boys than any other department in the school. One might also question whether as much social regeneration as is implied in the first part of the article can come any more surely thru shopwork than thru the other activities of the school. Hand training may or it may not be an important step in such a process, depending upon the ideals that direct it. In the last analysis it must come from the socially regenerated teacher, whether in one department or another. The right kind ought to be in all departments.

But to read the article in the spirit of

criticism is to lose the point of it; namely, its spirit. May the day come speedily when all teachers are qualified to teach children, and to use the subject assigned to them as a means. In that day manual training will shine as it never did before.

#### INDUSTRIAL REHABILITATION

**F**ROM a Nashville newspaper we learn that the State of Tennessee is the first to officially accept the terms of the industrial rehabilitation law recently signed by President Wilson.

The act provides for the rehabilitation and vocational training of persons injured in industrial accidents, and proposes to do for the injured civilian what the Smith-Sears act does for the disabled soldier. Three-quarters of a million dollars is apportioned for the work for the year ending June 30, 1921, and \$1,000,000 annually thereafter. These sums are to be allotted to the states in the proportion to their population, with the provision, however, that not less than \$5,000 shall be granted annually to each state. An additional fund of \$46,000 for 1920-21 and \$34,000 for 1921-22 is provided to guarantee this apportionment in the event enough states take advantage of the law to consume the original grant.

The state or county or local agencies must furnish dollar for dollar to match the Federal funds.

The work in Tennessee is to be administered thru the State Board of Education. The amount apportioned to Tennessee for the coming year is about \$17,000. In Washington the administration of the law is placed in the hands of the Federal Board for Vocational Education.

#### INDUSTRIAL ARTS MUSEUM ADVOCATED

**T**HE eleventh annual convention of the American Federation of Arts and the semi-centennial celebration of the Metropolitan Museum of Art were combined into a series of notable events in New York City on May 18th to 21st. Our attention has been attracted by the emphasis given to the industrial arts at this gathering. Even the

address of Robert W. de Forest, president of both the Museum and the Federation, pointed out that the founders of the Museum included within their vision of the future museum "all the arts, whether industrial, educational, or recreative". The museum was intended "to encourage and develop the study of the fine arts and the application of arts to manufactures and practical life". Any person who is accustomed to visit the Museum whenever he goes to New York City knows how well this vision of the founders is being kept clearly in view.

In harmony with this vision was an address on "Museums and the Industrial World" given at one of the sessions of the Federation by Richard F. Bach, Associate in Industrial Arts at the Metropolitan Museum. This address grew out of Mr. Bach's experience with manufacturers and designers in their use of the collections of the Museum.

Mr. Bach insisted that museums are educational institutions and that in order to be effective they must have well-developed educational machinery. Also, to be most efficient they must reach as many classes of people as possible. He declared that the highest service of any art museum to the public lay in this field of serving the producers and distributors dealing in home furnishings, costume and in other fields of industrial art design. In explanation he cited some interesting examples of the kind of contact which he has succeeded in establishing in the practical field of manufacture and design, thru his visits to factories, workshops and designing rooms. In conclusion, he advocated the industrial art museum as a working entity in any community; certainly in every community which produces objects of industrial art. Among those communities are to be counted practically all the larger cities of the country. He prophesized that in the not far distant future the industrial art museum would be considered before the fine



art museum, but maintained at the same time that no industrial museum could stand by itself as a complete unit without the art museum as a laboratory, and that therefore the ideal of the future would be the joint institution, possibly or even preferably under a single governing body, but with separate directors. An industrial arts museum would have certain advantages in that it could house reproductions and copies as well as originals, in fact could have replicas of choice pieces purposely made for study. Such a museum would require process exhibits, a showing of raw materials and machinery, construction models and above all continuous exhibits of articles of current manufacture selected by a jury of experts with regard to design and execution. Such a museum would become the most powerful agency for the advantageous growth of American design in the industrial arts. It would maintain intimate relationships with schools of industrial arts, with the working organization of manufacturers and designers and tradesmen, with vocational schools, with dealers, with natural history museums. Such a museum would need to keep up a running fire of current exhibitions, showing processes of manufacture and design of objects of daily use; it could in the end even maintain a model apartment or small house, changing the furnishings regularly according to style or cost and working with schools and dealers and makers in obtaining and using the items forming part of its significance, as in the case of Trenton which would specialize in pottery, etc. In a great city like New York, however, an industrial arts museum would need to be the most complete, embracing all the industries of artistic manufacture. Perhaps the remoter future might see a great industrial arts school as a factor in the public service of this museum.

*It is by working within limits that the artist reveals himself.*—GOETHE.

#### DUNWOODY INSTITUTE TO COOPERATE WITH THE UNIVERSITY OF MINNESOTA

THE MINNESOTA ALUMNI WEEKLY announces an important cooperative agreement between the University of Minnesota and Dunwoody Industrial Institute. It reads as follows:—

It is hereby agreed by the above mentioned parties, both subscribing to this agreement and plan of cooperation,

(1) That the special field of the University department of Trade and Industrial Education is the training of trade and industrial teachers for the types of school and classes under the Smith-Hughes Law; also, the training of teachers of manual training, industrial arts, and prevocational education.

That the special field of Dunwoody Institute is the training of mechanics and technicians of various kinds.

(2) That it is desirable, whenever possible, that there be an exchange of teachers between the two institutions.

(3) That all students taking teacher-training courses shall be registered in the College of Education of the University of Minnesota and all fees paid to the University.

(4) That arrangements shall be made whereby the University students in methods of teaching trade subjects, methods of teaching related subjects, and other similar courses may spend a portion of their class time at Dunwoody Institute.

(5) That so far as possible, Dunwoody Institute shall be used as the observation and practice teaching school for practice students in the department of Trade and Industrial Education of the University. This includes day, evening, and special classes.

(6) That ten scholarships per quarter shall be awarded the faculty of Dunwoody Institute, these scholarships good only for regular courses offered by the College of Education.

(7) That any classes given at any time at Dunwoody Institute in teacher training under the Smith-Hughes Law by regular or special members of the faculty of the College of Education shall be considered as regular College of Education classes and the members of these classes registered as such.

(8) That the purpose and spirit of this agreement is that both institutions may co-operate in every possible way in the development of all

forms of trade and industrial education in this part of the country.

#### WORK OF THE FOREST PRODUCTS LABORATORY

**T**HE Forest Products Laboratory at Madison, Wisconsin, has just celebrated the tenth anniversary of its organization. It was opened in June, 1910, and has been conducted by the U. S. Department of Agriculture in cooperation with the University of Wisconsin.

During the ten years of its existence the efforts of the laboratory have been devoted to the development of improved methods and processes for the better utilization of forest products of all kinds, and to the direct assistance of the industries concerned. Among the major lines of endeavor are the following:

- Pulp and paper.
- Hardwood and softwood distillation.
- Preservation of wood.
- Decay and decay prevention.
- Mechanical properties of wood.
- Glues for wood.
- Kiln drying and air seasoning.
- Grading structural timbers.
- Grading lumber.
- Laminated construction.
- Chemistry of wood
- Boxing, crating, packing.
- Needle and leaf oils.
- Ethyl alcohol from wood waste.
- Wood finishes.
- Aircraft parts.
- Veneers and plywood.
- Steam bending.
- Identification of wood.
- Microscopy of wood.

During the war direct assistance was rendered the War and Navy Departments and various other branches of the Government in the solution of many important problems, particularly in connection with aircraft, gunstocks, artillery wheels, escort wagons, and the boxing and crating of arms and stores for overseas shipment. It was necessary, thruout this period, to abandon all work on the regular peacetime program.

#### AN INVESTMENT, NOT AN EXPENSE

**T**HE city of Newark, New Jersey, is trying to get a new building to adequately house its growing vocational school. Such a building as is needed will cost \$1,125,000. It is to be known as the Seymour Vocational School. As is often the case, some of the leading citizens are attempting to sidetrack the plan by keeping doubters at the switch. Even the mayor asks, "Will the students really acquire a trade? Will their instruction be practical? Will they be ready to work in a factory, or will the education itself be a sort of half-baked amateurish course?"

The president of the school board, Frank H. Sommer, on the other hand, is able to meet the doubt by the statement that the school is already in existence, that it has 225 students and 160 more on the waiting list, and that there is a growing demand for the instruction and for the graduates of the school. All this is true in spite of the fact that the automobile repair and the electrical classes are now obliged to do their work on a public street and have to be closed in cold or stormy weather, and the printing class is in a basement room where electric lights have to be used even on sunny days. He ends his reply to doubters with a ringing paragraph that is worth quoting to school officials in other cities:

You can't talk to me about costs. This is an investment. An investment to which the youth of the city is entitled, and one that ought to have been made before. It will bring manifold returns in money, and in advancing the city of Newark to the leading position it occupied ten years ago. I base my position on these grounds, without rancor or bitterness.

#### AFTER THE EIGHTH GRADE, WHAT?

**T**HIS is the question that comes up every year with reference to thousands of individual children in every state in the Union. In many cases it is the greatest educational question of a lifetime. To answer it wisely is to turn the course

of a life in the right direction. In order to assist parents, teachers and pupils in answering this question the Civic and Vocational League of the Cincinnati public schools has issued a thought-stimulating number of its *League Herald* almost wholly devoted to this purpose. In this way the interested parties have all the possibilities placed before them. First on the list comes the high schools with their 11 courses of study. Then comes the junior high schools giving two-year courses, and all-day trade schools, the night schools and the part-time schools.

Why would not the preparation and printing of such a statement be a good project for any well-equipped school print shop? If not done by any other agency the shop could certainly render a real service in this way.

#### NEWARK TO HAVE A NEW VOCATIONAL SCHOOL BUILDING

**A**FTER an extended and heated public discussion the Board of Education of the city of Newark, New Jersey, has let the contracts for the erection of a new vocational school to cost \$1,125,000. It is to be known as the Seymour Vocational School. The chief factor in the discussion was the public statement by the mayor that the action of the Board of Education, at this time when prices were so high, was "criminal". He attempted, also, to prove that the kind of school to be built would not be effective in bringing practical results, but in this he was not successful and

brought ridicule upon his head. There were probably many citizens who doubted the wisdom of building the school at the present time, tho there was never any real doubt about the need of the building, but there were more citizens who were unwilling to have the mayor dictate to the Board of Education what action should be taken. The *Newark News* says, "No other mayor of Newark has ever been as severely condemned or so thoroly excoriated for attempted usurpation of official function by any public body, at least, not within memory".

On June 24th, with appropriate ceremony James E. Dougan, principal of the school, and 120 students lifted the first shovelful of earth from the site of the new building. When completed the school will accommodate 800 students.

#### NEW DIRECTOR FOR FEDERAL BOARD FOR VOCATIONAL EDUCATION

**A**T the meeting of the Federal Board for Vocational Education held on June 21st, Uel W. Lamkin was elected director of the Board, the position which has been vacant since the resignation of Dr. C. A. Prosser. Mr. Lamkin has recently been the chief of the Division of Rehabilitation. This promotion for Mr. Lamkin will be taken as expressing the opinion of the Federal Board concerning his efficiency and especially his judgment in dealing with the criticisms of the Federal Board Rehabilitation work made by the American Legion and the *Evening Post* of New York City.

#### MAN-MAKING

*We all are blind until we see  
That, in the human plan,  
Nothing is worth the making, if  
It does not make the man.*

*Why build these cities glorious  
If man unbuilted goes?  
In vain we build the world, unless  
The builder also grows.*

—EDWIN MARKHAM.



## WASHINGTON CORRESPONDENCE

### THE NEXT STEP IN MEETING THE NATIONAL CRISIS IN EDUCATION

**A**T the National Citizens Conference on Education which met in Washington in May, the Commissioner of Education was called upon to take the initiative in organizing and conducting a nation-wide campaign on "education about education." The next step in this campaign was taken within a few days thereafter, when Commissioner Claxton issued a call for a special conference which met in Washington on Friday, June 25th.

There were present at this conference representatives of 34 national organizations, having a combined membership of several million persons, who unanimously promised hearty cooperation in and support of the proposed campaign. Among the organizations represented were the American Federation of Labor, National Civic Federation, American Bankers Association, Chamber of Commerce of the U. S. A., National Association of Manufacturers, Southern Commercial Congress, General Federation of Women's Clubs, and a number of patriotic societies, women's clubs, farmers' organizations, and others.

To prepare a summary of the conclusions of the conference a committee was appointed, consisting of Albert G. Bauersfeld, chairman, representing the Vocational Education Association of the Middle West; Florence King, representing the National Women's Association of Commerce; and Robert L. Kelly, representing the Council of Church Boards of Education. The report of the committee, which was adopted unanimously, declared that "there is no question of greater interest and concern to the people of a democracy than the question of education." The final paragraphs of the statement are as follows:

#### IMMEDIATE ACTION DEMANDED

We are convinced that there is urgent need for immediate action along the following lines: (a) The assurance of an adequate supply of properly prepared teachers, including greatly extended facilities for this preparation; (b) Increased financial support for schools and educational agencies of all kinds; (c) Readjustment of educational programs to meet the demands of the new era.

We recommend that the organizations which we represent cooperate in all possible ways in the educational campaign authorized by the National Citizens Conference on Education, held in Washington on May 19 to 21, which is now being conducted by the Bureau of Education, and we pledge ourselves to endeavor at the earliest possible moment to secure official action to that end by these organizations.

#### OBJECTIVES OF THE EDUCATIONAL CAMPAIGN

**T**HE conference also went on record as favoring four propositions, which may be regarded as planks in the campaign platform:

(1) The entire educational system of the country must be thought of, and promoted, as a unit, including elementary schools, secondary schools, and higher educational institutions.

(2) There is need of promoting a comprehensive plan of "extension education," in order to meet the needs of: (a) The millions of working people, most of whom have left school with insufficient education; (b) The millions of young people who become of voting age each year, and who should have some systematic preparation for the duties of citizenship; (c) The millions of women who will probably be enfranchised shortly, and required to participate in the settlement of some of the most momentous questions which the nation has ever faced; (d) The millions of homemakers, who need special preparation for the most exacting of callings; and (e) The millions of ex-service men, the educational plans of many of whom were interrupted by the war.

(3) Some means must be found to provide for more liberal support of institutions for the professional preparation of teachers.

(4) The policy must be adopted at once of paying to teachers salaries equivalent to those paid to persons of similar ability and preparation in other callings.

#### HALF-WAY MEASURES WILL NOT SUFFICE

AS Commissioner Claxton has repeatedly pointed out, if there is any argument for placing a trained and capable teacher in any classroom, anywhere, that argument holds good for all other classrooms, everywhere. There is evidence now that the nation is becoming aroused to the present and future perils involved in a policy which has resulted in the wholesale exodus from the teaching profession, and the present acute shortage of skilled and experienced teachers.

One of the strong notes struck at the earlier conference was that by Dr. Bagley in his plea for "a competent teacher for every American child." It is true, as he said, that "the great bulk of our teachers are immature, transient, and ill-trained."

If we are to have "a mature, well-prepared, and relatively permanent teacher for every classroom in the land," in time to prevent "the breakdown of democracy thru lack of intelligent citizenship," we must indeed adopt heroic measures, promptly.

—W. T. B.

## IN FOREIGN COUNTRIES

#### LONDON CONTINUATION SCHOOL CURRICULUM

EIGHT hours a week are to be given to school work under the new continuation school plan in London. This time is to be divided into four blocks of two hours each. In general the time is to be allotted thus:—

1. English subjects, two hours (principally literature, history, geography, biography, recitation, civics or citizenship, and private study).
2. Calculations and drawings, two hours (including free and mechanical drawing).
3. Physical exercises and general subjects, two hours (general subjects may cover singing, appreciation of art and music, and lectures on health, hygiene, &c.—lectures of a popular type).
4. Practical work, two hours (on a wide basis to meet varied needs).

It is assumed that this division will be subject to variations. It is felt that the principals of these new schools should "be encouraged to organize the work on broad lines in accordance with the needs of particular types of students. It may be found necessary to arrange schemes for students of exceptional attainments or to meet the special requirements of others, in the teaching, for instance, of modern languages".

"The sub-committee also recommend

that in the case of students from 16 to 18 years there should be at least a vocational bias in the curriculum, and that in some cases there should be education of a definitely technical or commercial character."

#### EDUCATION AS A FACTOR IN INDUSTRY

NOT long ago the Master of Balliol spoke at Oxford on the above subject. He told his hearers that they would find that all their industrial problems, including "the class war, the need of greater output and of dilution, and the possibilities of profit-sharing and bonuses, of guilds, of industrial democracy, the use of direct action, in politics—all depend upon the intelligence of the worker and of the employer." He said that there was a remarkable development of the demand for education in these two quarters which until lately had not agreed upon this matter.

Not only were trade unions demanding reform in education but many of the leading employers and manufacturers were actively promoting it. It was lucky that this keen educational interest existed because it was clear that whichever way they looked the future need was for a better-educated industrial world. No one could doubt that they were at a turning point in their national history. A new era had come upon them. They could not stand still. They could not re-

turn to the old ways, the old abuses, the old stupidities. It was in their power to make the new era one of such progress as to repay them even for the immeasurable cost, the price in lives lost, in manhood crippled, and in homes desolated. The duty of education was to fit for citizenship. They must provide more or democracy would fail as autocracy, aristocracy, and plutocracy had. But if democracy failed what was left? If they did not make better citizens, then political and social institutions would break down under the workers' refusal to be cogs in a machine. Lastly it was a question of world-peace. If they held the Empire together and agreed with the U. S. A. peace was sure, and only if they did these things. Without world peace they saw that Western civilization was ruined—and what became of their home industries then?

#### PRACTICE IN THE ELEMENTS

**A**T A MEETING of the Education Section of the British Psychological Society held some time ago at the London Day Training College W. J. Collar read a paper on "A Statistical Survey of Arithmetical Ability". Some of the conclusions presented in this paper will be of interest to manual arts teachers because they are in line with the most recent thought in their field of effort.

Among some of the more important conclusions drawn were that neither accuracy nor speed were in themselves good tests of general ability, since, although dependent upon educational ability, their efficiency was mainly determined by practice. Hence since inaccuracy in one mechanical step might invalidate the result of a hundred others, it is wise to allow a regular period for practice in these elements. Further, he found a close relation between the knowledge aspect of arithmetic as shown in the

power to work rules, and in the intelligent aspects as exemplified in skill in dealing with problems, and further agreed that there probably exist a special form of mental ability which operates in arithmetical work generally, and which, as distinct from literary ability, functions in number rather than in words.

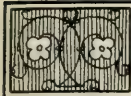
#### HIGHER TRAINING FOR INDUSTRY NEEDED

**P**ROFESSOR Maxwell Garnett, principal of Municipal School of Technology of Manchester, in a recent address on "A National System of Education", pointed out that the provision for university training in England was less than half of what it is in America, counting only the best universities, and only a quarter if all the four-year colleges were counted. He maintained that if English industry is to compete with the industries of the other parts of the English-speaking world, and if English thought is to continue to occupy its former high level, this proportion must be changed. As one measure in this direction he recommended a properly coordinated system of scholarships and maintenance allowances, especially for certain industrial communities, which will make it possible for the most able boys to go to the universities "irrespective of rank or income of the father." He wanted these scholarships to connect up with the continuation school under the new Education Act. Such schools give boys in the industries an outlook and provide an opportunity. He insisted that university education in its application to technology was not only a need but a national necessity.

*Let the teacher not teach as much as he is able to teach,  
but only as much as the learner is able to learn.*

—COMENIUS.





## PROJECTS, PROBLEMS AND NOTES



THIS month the primary aim in this department is to give problems and suggestions to teachers who are planning their fall work—especially their work for the month of September. In the September issue we plan to give suggestions that may be of use in October and so on thru the year. We shall not give as full details as we did for the two courses we outlined last year, but we shall supplement what was given then with a few suggestions in elementary carpentry and elementary cabinet making, and then add suggestive material for advanced wood-working, courses in metalworking, mechanical drawing, and other subjects as opportunity presents itself. In general, then, the aim will be to make the problems as seasonal as possible. The readers may therefore expect quite a number of elementary projects and problems during the fall months and more advanced ones later in the year.

### ELEMENTARY CARPENTRY

TEACHERS who are following a course in rough construction work or carpentry with beginners in shop-work, say in the seventh grade, may be interested in two problems sent to us last fall in response to our invitation to send in problems that had proven to be valuable. They are entirely different, yet both might be used in the same course. We refer to the string winder and the bicycle rack shown in the accompanying drawings.

The string winder was sent by Professor Vernon E. Sayre, of the University of North Dakota, because he found it satisfactory for a first problem. He said concerning it that he furnished stock cut to width and thickness, and gave extra practice in sawing as indicated by lines a and b on the drawing.

The bicycle rack came from E. E. Fitzpatrick of Noblesville, Indiana. He says of it:

The bicycle rack affords a good problem for elementary carpentry.

There are many blocks and uprights to be made and this gives practice in measuring and sawing. We made our rack out of old s2s lumber. All the blocks and uprights had to be ripped out and planed on both edges. We did not require strait joint edges but we did expect the work reasonably well done.

Each boy was required to lay out his work and present it for inspection before sawing. The material was cut a little over size, then planed to width and sawed to length with the back-saw.

The work does not show little inaccuracies since all the joints are hidden.

When the rack was ready to assemble we laid off the sill and plate, showing where each block was to be nailed. Each boy was given one or more blocks to nail on the sill or plate.

The uprights were then nailed in: Nail thru the plate into the upper end, toe-nail to the sill. Be sure to hold them firmly against the blocks while nailing.

The rack can be supported by either posts or brackets. I prefer posts where convenient as that prevents shoving the rack out of place.

Our rack is 18 ft. long and is supported by a post at either end. It accommodates eighteen wheels by setting them on both sides of the rack.

The ornamental flower stick has been used in Cleveland as a first lesson with a sixth grade class. A great variety of birds are used in working out this problem. It brings into correlation the manual training and the art work. The following teaching outline has been developed in connection with this problem:

### ORNAMENTAL FLOWER STICK

#### Tools:

Rule, try-square, knife, plane, jack-board, back-saw, coping saw.

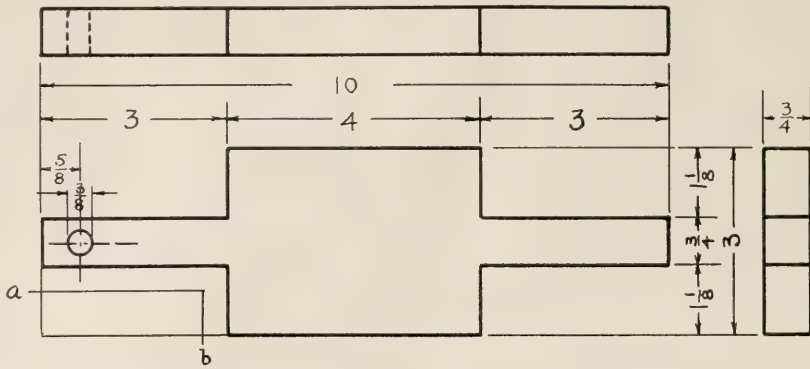
#### Material:

White pine,  $3\frac{3}{8}$ " x  $7\frac{3}{8}$ " x 18",  $\frac{3}{16}$ " coping-saw wood, colors and stain.

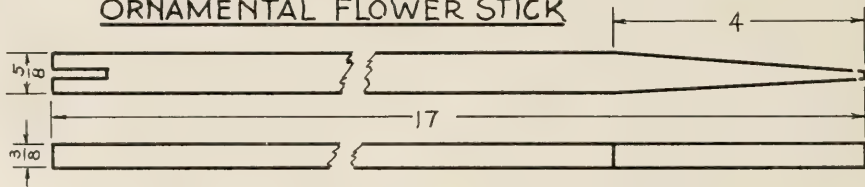
#### Steps in Construction:

1. Discuss with the class the model and the drawing. (Pupils' individual drawings on blackboard drawing).

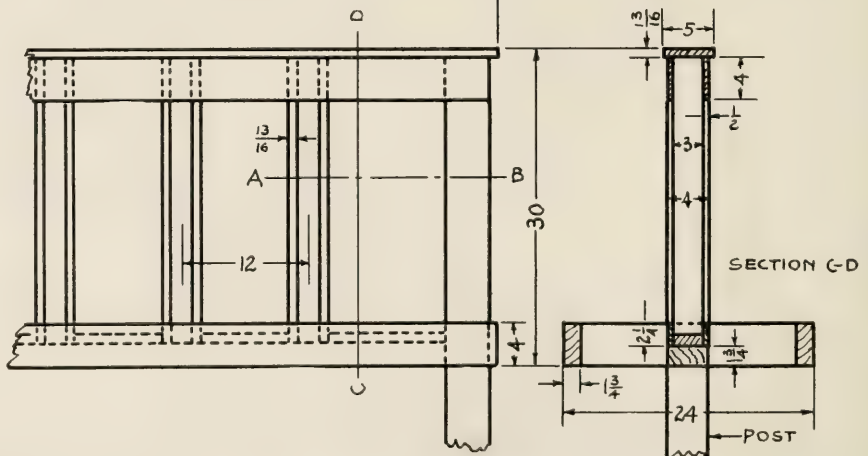
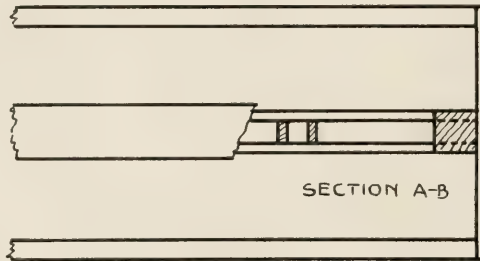
# STRING WINDER



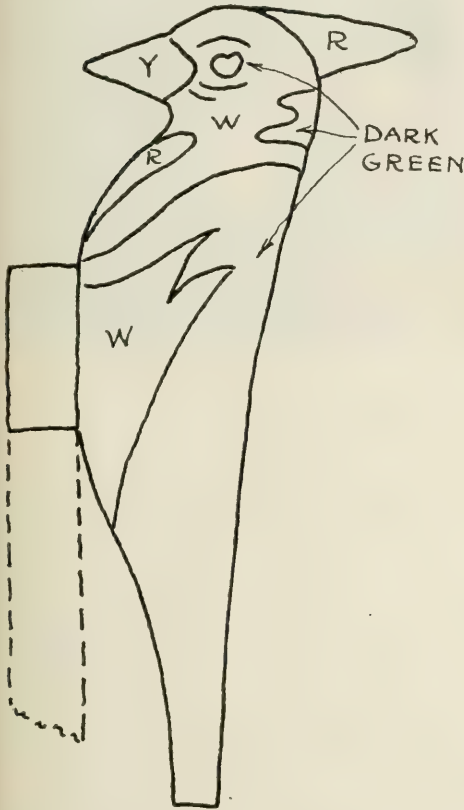
# ORNAMENTAL FLOWER STICK



# BICYCLE RACK



2. The wood—name, qualities, etc.
3. With pencil, mark one edge, selecting the best edge.
4. Teach the use of the plane for long edge planing, and plane the marked edge straight and square, testing with try-square.



THE BIRD, FULL SIZE, FOR THE ORNAMENTAL  
FLOWER STICK

5. Teach the rule and knife for measuring and ruling lines, and rule a line  $\frac{5}{8}$ " from the marked or finished edge.
6. Plane to this line, straight and square.
7. Class work piece to width. Watch, criticize and help.
8. Teach use of plane and jack-board for blocking, and block one end of the wood.
9. Teach knife and try-square for squaring lines; measure length from finished end, and square a line around the wood.
10. Teach the saw, and cut off outside and near the line.
11. Class work to length. Watch and help in the work.

12. Measure and square a pencil line  $\frac{1}{4}$ " from one end (the poorest end).

13. Lay out the oblique lines.

14. Cut with knife, and finish with plane and jack-board.

15. The notch is made in width equal to the thickness of the material used for the bird. Lay out parallel lines and saw inside the lines with back-saw, holding the wood well down in the vise. The bottom of the notch can be cut across with coping saw.

16. Plane the two surfaces against the bench stop, taking off only just enough to smooth.

17. Color and shellac or varnish the bird, and stain the stick.

Teach the tools only for the required use. Leave detailed instruction about the tools until later lessons.

#### ELEMENTARY CABINET MAKING

THE knife strop is one of the problems used in the schools of Rochester, N. Y., Raymond C. Keople, director of the Department of Vocational Education. The rope winder and the broom holder are familiar problems in slightly different form. The drawings were made by Thomas W. Johnston.

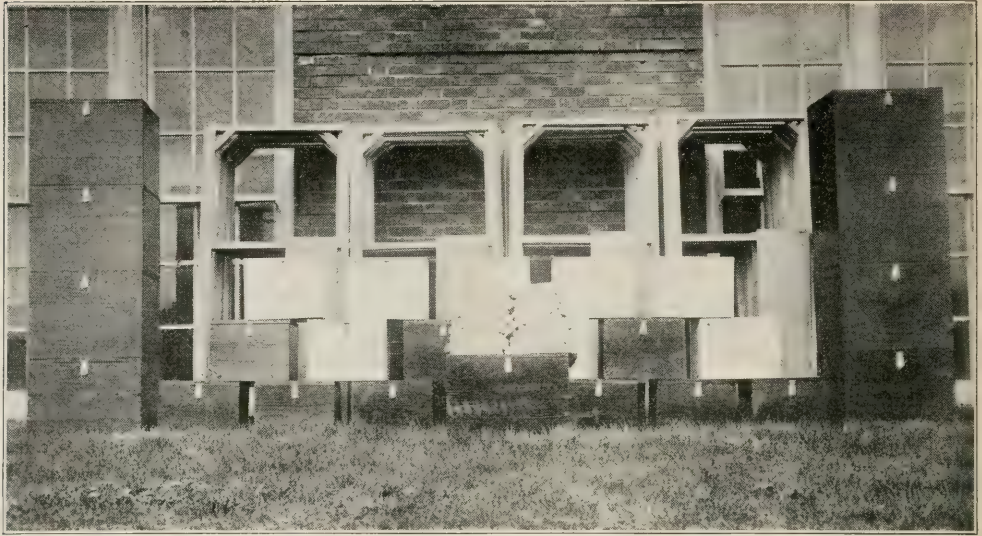
*References.* For outline of what to teach, for textbook references, for additional problems, and for drawing problems to accompany both elementary carpentry and elementary cabinet making, see *Manual Training Magazine*, September 1919, pages 27 to 37.

The Manual Arts Press has on hand a few sets of Work Sheets published last year which will be sold at 50 cts. a set as long as they last. See advertisement in this issue.

#### A COMMUNITY PROJECT BALLOT BOXES AND VOTING BOOTHS

The Shelby County, Indiana, commissioners redivided the county into election precincts, creating thirty-three more in anticipation of the increase of voters when the women vote. They advertised for bids for ballot boxes and folding booths in order to accommodate the voters in the new precincts, and the Manual Training Department of the Shelbyville High School was the successful bidder. The work was done by the different classes in the de-





BALLOT BOXES AND VOTING BOOTH MADE BY STUDENTS OF HIGH SCHOOL,  
SHELBYVILLE, INDIANA

partment and was completed in record-breaking time, only two weeks being required to do it. This was an excellent community project for the boys, and it netted several dollars for the department as well as a saving of over \$100 for the taxpayers of the county, which was greatly appreciated by all concerned.

The above statement, and the photograph from which the accompanying illustration was made, were received from Roy S. Ray, director of manual training, High School, Shelbyville, Ind.

#### METALWORK

THE cake turner and the cookie cutter shown in the accompanying plate of drawings are taken from the course recently worked out in the City of Cleveland, Ohio. Other problems from this course will be given in future issues.

#### WIRING STRUCTURE FOR ELECTRICAL SHOPS

Courses in electricity are being quite generally offered in the prevocational, intermediate and prevocational schools, aside from similar courses more highly specialized in high, trade and technical schools. It is often true that schools of the former group will organize such courses for shop rooms

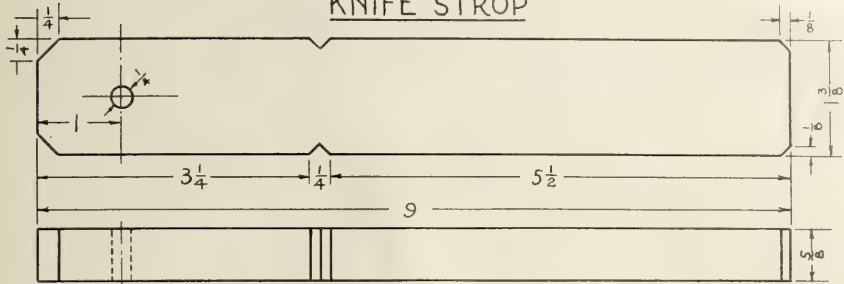
where there is hardly sufficient space for a satisfactory amount of wiring work of an individual nature to be carried on. The most desirable condition of affairs would permit of a space large enough so that the work of each pupil might be allowed to remain on the walls or ceiling until completed. Where the pupils number over 230, however, (as in some Boston electrical courses) it is manifestly impossible to make any such provision in the average shop.

Such a condition would seem to call for a plan which would permit a pupil to do most of his smaller wiring problems on an individual board, which could be placed in a case or rack at the end of the shop period. Pupils who were assigned to the larger tasks could make use of certain portions of permanent wall space available for such purposes.

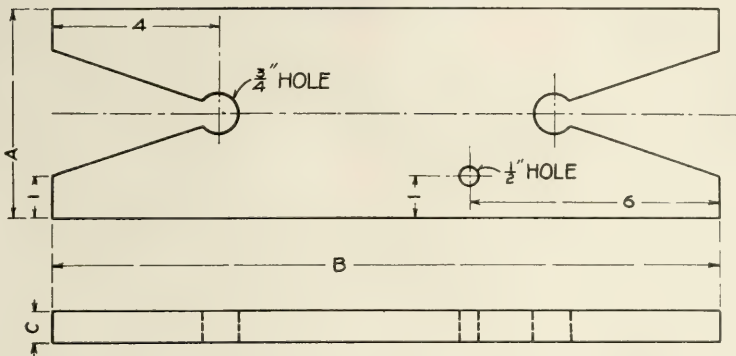
The problem of meeting such a condition with an ultimate minimum of expense seems possible of realization by the use of the type of wiring structure indicated in the accompanying drawing. The structure is of moderate cost, simple in construction, permanent and durable, easy to transfer to another shop when desired, and insures good ventilation and comfortable working conditions for the pupils.

The length and width of the individual wiring boards here suggested can be changed as desired, provided corresponding changes are made in the dimensions of the pipe bays. It should also be remembered that if a mezzanine floor be used as a top or ceiling for such a booth, the entire structure

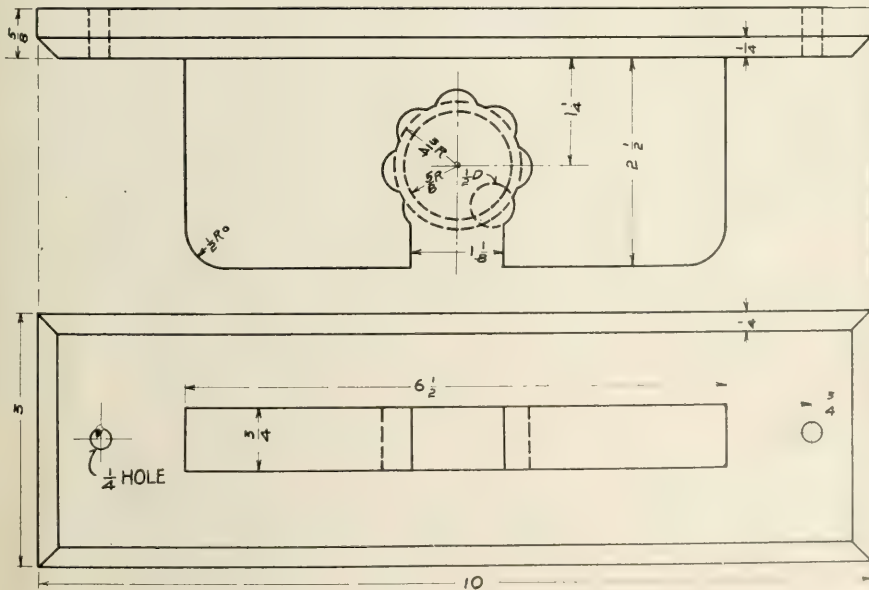
### KNIFE STROP



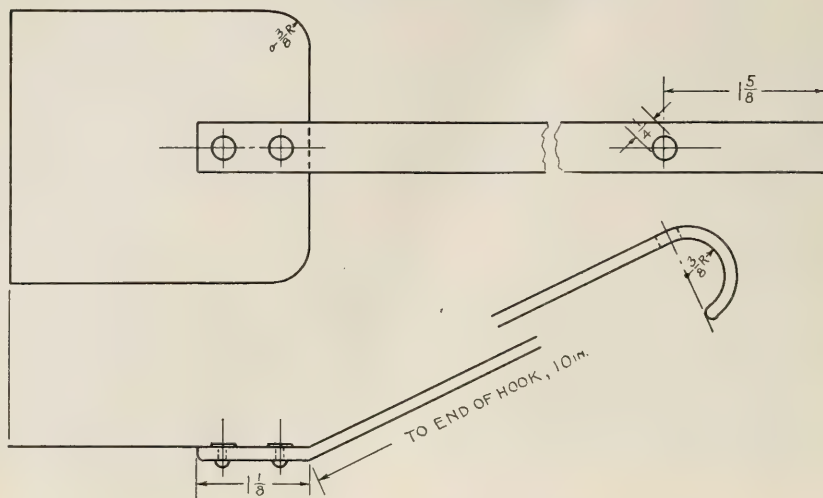
### ROPE WINDER



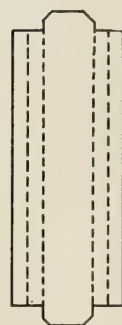
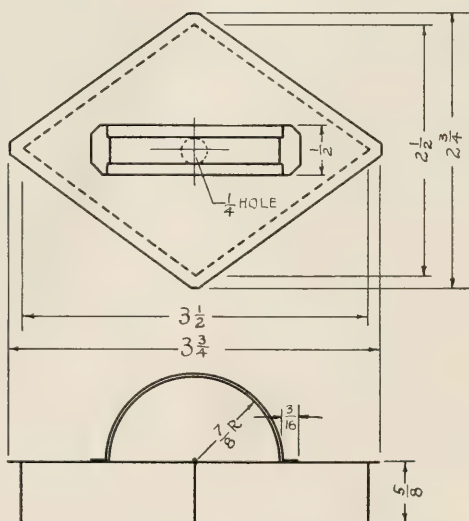
### BROOM HOLDER



## CAKE TURNER



## COOKIE CUTTER



HANDLE  
PATTERN



BODY PATTERN



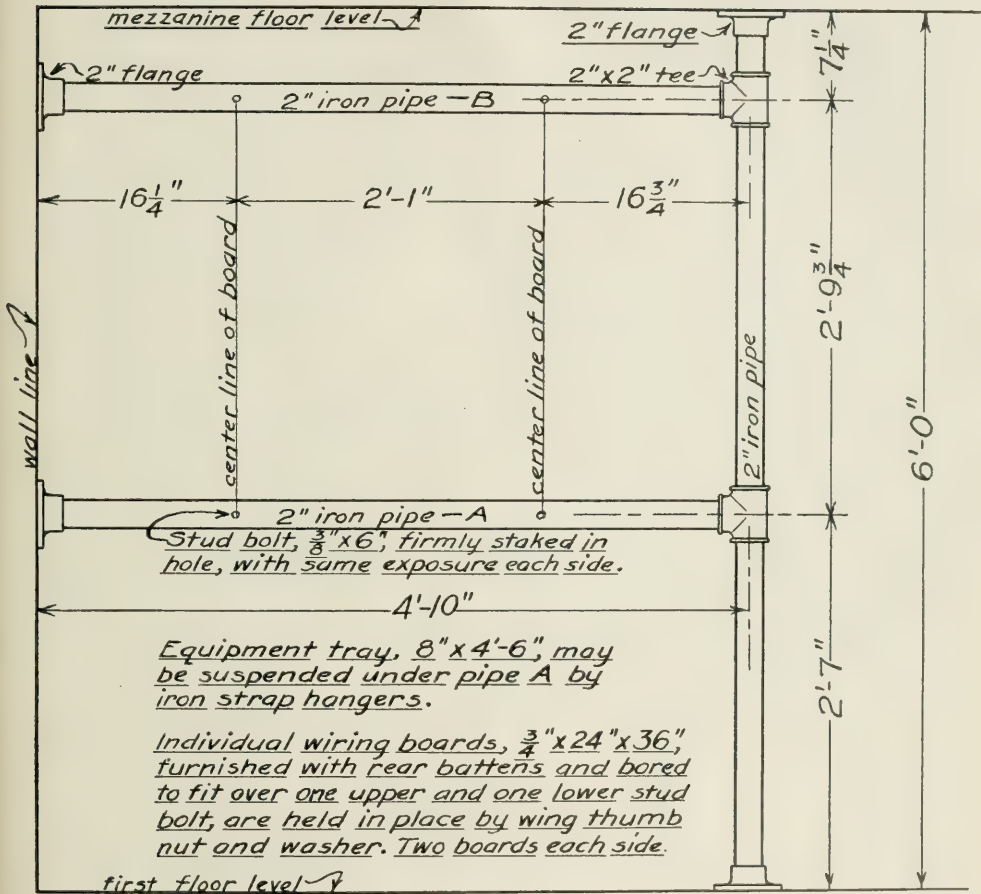
# WIRING STRUCTURE FOR ELECTRICAL SHOPS

DESIGNED BY

FRANCIS L. BAIN

BOSTON, MASS.

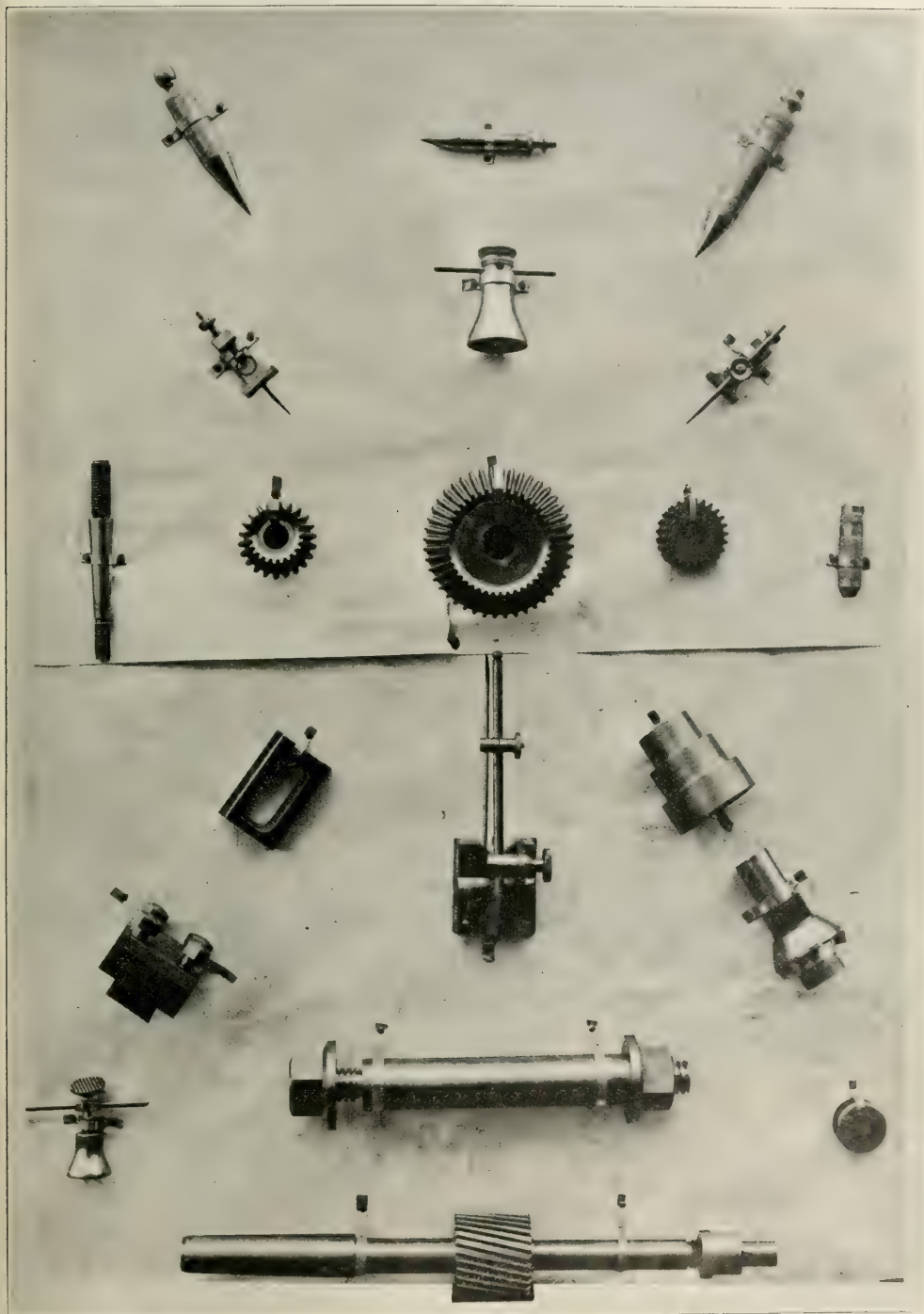
SCALE - 1" = 1 ft.



## WIRING STRUCTURE UNIT

Two of these units, placed 5'-10" apart and firmly attached to wooden wall, constitute one booth with ample wall space for six pupils. Thus a floor space 23'-10" x 5'-4" will accommodate twenty-four pupils on the first floor.





PROJECTS IN MACHINE SHOP PRACTICE MADE BY STUDENTS IN THE  
STATE NORMAL SCHOOL, SANTA BARBARA, CALIFORNIA, 1919.  
ROBERT H. HARCOURT, INSTRUCTOR.



## CURRENT PUBLICATIONS

*American School Toys.* By C. A. Kunou, supervisor of manual training, Los Angeles, California. The Bruce Publishing Co., Milwaukee, Wis., 1920. Size 11 3-4 x 8 1-2 in. oblong; 71 pages, price, \$1.25.

This is a collection of drawings of toys, worked out in the schools of Los Angeles, under the impulse of the war. During that period toy making was a most popular activity and the sale of the toys yielded a large sum to the American Red Cross.

The book will help teachers in other cities to carry over into the after-war times the spirit and interest that was aroused in 1917-18.

All the drawings are given full size ready for tracing in the process of reproduction. In the early pages of the book the author gives directions for making and finishing the toys.

*Art in Costume Design.* By Edna Mann Shover. Milton Bradley Co., Springfield, Mass., 1920. Size 7x10 in.; 150 pages with 40 illustrations, most of which are full-page plates.

This book grew out of experiences in giving a series of lectures to the teachers of the Indianapolis public schools. It is intended to give definite impressions of the typical costumes of the more important periods of history. Egyptian, Greek, Roman, Byzantine, Renaissance and Colonial are included in the volume.

The book gives "practical suggestions for those interested in art, sewing, history and literature."

*Armenia and the Armenians.* By Kevork Aslan. Translated from the French by Pierre Crabites. Published by Macmillan Co., 1920. Price, \$1.25.

This book is of special interest to anyone studying the "Armenian Question".

## RECEIVED

*A New Norton Educational Opportunity.* A pamphlet outlining a special mechanical course offered by the Norton Company, Worcester, Mass.

*Plan of Safety Instruction in Public and Parochial Schools.* A 16-page pamphlet by Dr. E. George Payne, principal of the Harris Teachers College, St. Louis, Mo. Published by the National Safety Council, 168 N. Michigan Avenue, Chicago.

*Western Arts Association Bulletin.* Announcements and membership list for 1920. L. R. Abbott, Secretary, 234 Division Ave., Grand Rapids, Mich.

*The Making of a School Paper.* Information for those interested in the promotion of correlation between printing and English in junior high schools. Compiled by M. H. Patch, Willson Junior High School, Cleveland, Ohio.

*Industrial Education in the Schools of Altoona, Pa.* An illustrated pamphlet outlining courses of study in considerable detail. The outline covers process, project, drawing, mathematics, science and trade knowledge and theory. G. D. Whitney, director of vocational education.

*Proceedings of the Vocational Section of the Inland Empire Teachers' Association.* George Henry Jensen, chairman, University of Washington, Seattle, Wash.

*Suggested College Courses on the Human Side of Engineering.* Issued by the Industrial Service Movement, 347 Madison Ave., New York City. Contains a valuable list of references on each of the thirteen sub-topics in this course.

*The Individual and the Curriculum*—Experiments in Adaptation. One of the series of Studies in Education issued by the Francis W. Parker School, Chicago. Price 45 cents.

*Proceedings of Educational Congress in Pennsylvania.* November 11-22, 1919. Issued by the Department of Public Instruction, Harrisburg, Pa. Industrial education is treated on page 433 to 476.

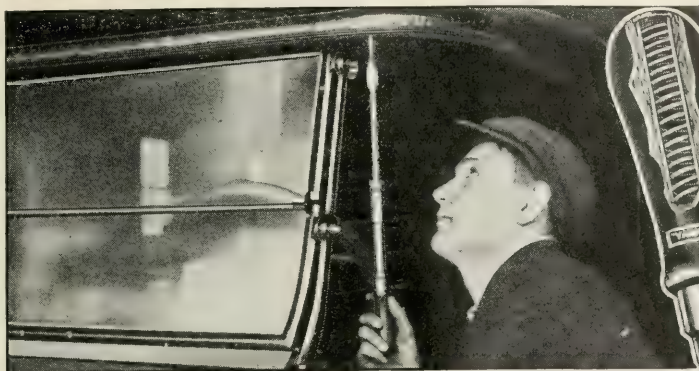
*Arthur Hill Trade School, Saginaw, Mich.* A circular outlining a course of study.

*Statistics of State School Systems.* By H. R. Bonner. Bulletin No. 11, 1920. Issued by the U. S. Bureau of Education, Washington, D. C.

*Report on the Establishment and Organization of the Trade School for Girls.* By Cleo Murtland. Issued by the Board of Education, Philadelphia, Pa.

*Report of the Conference on New Ideals in Education* held at Cambridge, England, from July 25 to August 1, 1919. Price, 2s. May be obtained from M. B. Sygne, 24 Royal Ave, Chelsea, S. C. 3, London, England.

This pamphlet contains among others the following addresses: "The Creative Impulse and its Place in Education" by Henry Wilson; "The Effect of Handicraft on the Mind and Body" by Dr. A. J. Brock; "The Craftsman, His Education and His Place in Industry", by Alec Miller; "Creative Education—Learning by Doing", by E. F. O'Neill; "The Educational Value of the Artistic Crafts" by Morley Fletcher; "Craft and Culture" by Professor W. R. Lethaby.



### Three Adjustments

A touch of your finger moves the ratchet shifter to the action you need. Change while tool is in position if you like.

1. Right-hand Ratchet.
2. Left-hand Ratchet.
3. Rigid.

## This Screw-Driver Does the Work Itself

ALL you need do is place it in position and PUSH! The live spring inside takes care of everything else. It shoots the handle back QUICK for the next push. Almost asks you to "make it snappy!"

It holds the bit in place; rests your arm between thrusts; helps you work faster—and better.

Makes one hand as good as two when you have to reach 'way over your head or into hard-to-get-at corners.

Draws screws as easily as it drives them. Just reverse Ratchet.

## "YANKEE"

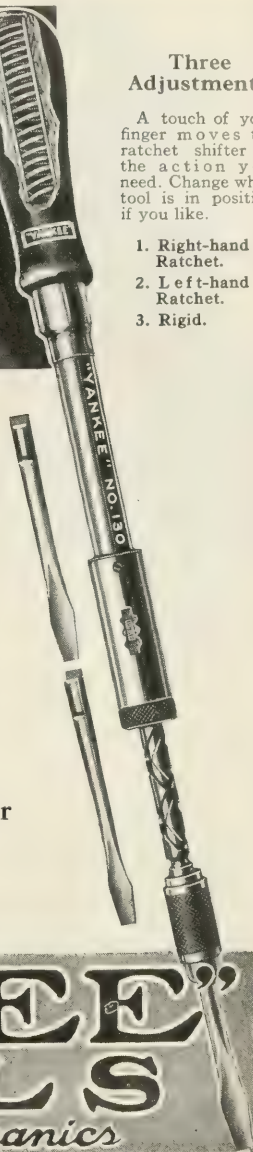
### Quick Return Spiral Ratchet Screw-Driver

No. 130 Standard Size (illustrated).

No. 131 Heavy Pattern.

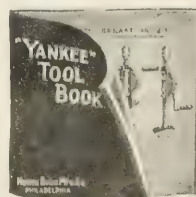
No. 135 Light Pattern.

Your Dealer Can Supply You.



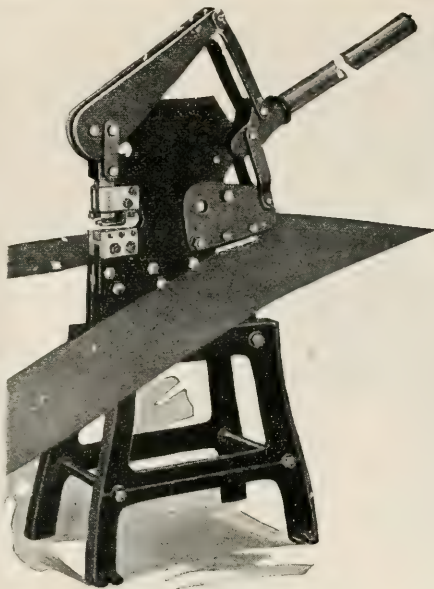
## Free Text Book For Students

Write today for "YANKEE" Tool Book. Every page contains something that will help you advance more rapidly toward your goal of master mechanic. All the famous "YANKEE" Tools are shown, many of them in action. Text explains why they do faster and more accurate work in tapping, drilling metal, boring in wood, driving screws.



**NORTH BROS. MFG. CO., Philadelphia**





## “Armour Plate”

The steel that goes into the Buffalo “Armour Plate” line has a tensile strength of 75,000 lbs. per square inch.

A machine that is almost unbreakable.

These powerful machines—punches—shears—bar cutters—are built in all sizes for hand or power. They are especially adapted to the school work, because of their compactness, light weight and ability to stand almost any kind of handling.

*Write for Catalog P-S 31*

### Buffalo Forge Company

BUFFALO, N. Y.

*“Buffalo”*

## PERSONAL ITEMS

HARRY W. LELAND, director of manual arts in the city of Fitchburg, Mass., died on June 12th after a two week's illness of pneumonia. This has come as a severe shock to his many friends. Mr. Leland was for twenty years the teacher of manual training in Leominster, Mass. In 1913 he became director of manual arts work in the public schools of Fitchburg, and recently he was given the added responsibility of director of the continuation school to be opened in September.

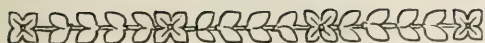
Mr. Leland was a graduate of the Worcester Polytechnic Institute and before going to Leominster spent two years in practical work with the Dean Steam Pump Co., of Holyoke, Mass., and gained some experience in teaching at Atlanta University. Outside of his school he contributed much to the higher life of the community. A friend says of him, “He was a real man among men and a great friend of young people”.

ERNEST W. BECK, for several years director of manual arts in the schools of Nashua, New Hampshire, and more recently director of training and welfare work in the shipyards of the Groton Iron Works, New London, Conn., expects soon to become associated with the Grasse Chemical Corporation as an efficiency engineer. Mr. Beck is well known to New England because of his fine personality and untiring effort, and he has had splendid success in his school and business matters, and it is expected that his new position will afford him further opportunities to demonstrate his best possibilities.

IT IS PROBABLE that Edward C. Emerson, First Assistant Director, Department of Manual Arts, Boston, and George F. Hatch, assigned to the Department as assistant director from the Brighton High School, will devote a portion of the summer to the activities of the Vermont-Boston Lumber Company in Castleton, Vermont, where the company is engaged in manufacturing over four million feet of hardwood lumber. Mr. Emerson is president of the corporation and Mr. Hatch a director, and the summer vacation will afford them their opportunity to devote any considerable amount of personal effort and time to what promises to develop into an interesting and busy project.

A. S. MACRAE, a recent graduate of a State Teacher Training Course in Boston, has been appointed to a position as woodworking instructor in the newly-established Continuation School of Cambridge, Mass.





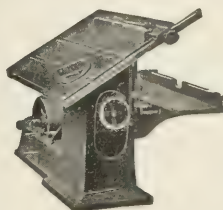
### PERSONAL ITEMS—(Continued)

THE FEDERAL BOARD for Vocational Education will operate rehabilitation classes in the Boston Trade School from July 6th to August 28th. The machine shop work will be under the direction of Messrs. Baker, Russell, Hammond and Lane; the woodworking classes, Messrs. Roswell and Engborg; sheet metal pattern drafting, Mr. Booth; general academic work, Mr. Bergin. Other classes may be opened at the pleasure of the Federal Board. Francis L. Bain, assistant director in the Department of Manual Arts, Boston, will serve as last year in the capacity of Counselor or head instructor. Mr. Bain has recently been commissioned as Major in the Engineer Section of the Officers Reserve Corps, United States Army, for a term of five years.

BOSTON will open nearly a dozen new shop centers this fall, including woodworking, sheet metal work, bookbinding, electricity and printing, mostly for intermediate classes, but with some provision for prevocational extension work. The keynote of both these types of classes will be intensive work of a nature combining educational and practical value. Co-operative industrial work bids fair to become the strongest feature of Boston's school industrial activities, and is meeting with good success in the various schools where it has been organized.

D. C. FLEMING, instructor in automobile work at Bradley Institute before the war, is now associated with H. M. Rugg, supervisor of technical instruction in the united Y. M. C. A. schools whose headquarters is in New York City. He is engaged in an effort to improve the efficiency of automotive instruction in all the Y. M. C. A. schools of the country. Mr. Fleming has had ten years of experience in automobile work. During the war he was in charge of the motor inspector division of the Ordnance Department at the Holt Manufacturing Co., at Peoria, and later, at the Holt plant at Stockton, California. This, with his five years of experience as a teacher, gives him a rich background for his new work.

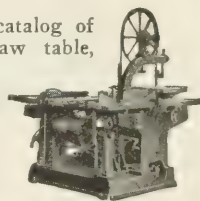
R. B. VAUGHAN has been appointed director of technical and vocational education for the Providence of Manitoba. He began his work on July 1. For the past two years Mr. Vaughan has been assistant director of agricultural extension service for the Province of Manitoba. Mr. Vaughan is a graduate of Columbia University where he secured his M. A. degree in 1918.



## Crescent Wood Working Machines

are the tools your students will eventually use so give them the opportunity now of learning about this splendid line of wood working machinery.

Send today for our catalog of band saws, jointers, saw table, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinders, borers, hollow chisel mortisers, Universal wood workers.



**The Crescent Machine Co.**

46 CHERRY ST.

LEETONIA, OHIO

## Roller Nut Vises

**RAPID ACTING OR CONTINUOUS  
SCREW ADJUSTMENTS**

The simplest in construction,  
the longest wearing,  
the most satisfactory in action of any  
rapid-acting vise on the market



No. 80

The size generally used in Technical and  
High Schools

Manufactured by

**The Abernathy Vise & Tool Co.**

NOT INC.

2814-42 W. 26th Street

CHICAGO, ILL.

# A good teacher knows the value of a good textbook

Select the text best adapted to your needs and with the assurance of the publishers that they will satisfactorily meet every classroom requirement.

## **WOODWORK FOR BEGINNERS—Griffith**

A remarkably simple treatment of elementary woodworking for students in the seventh and eighth grades. It deals with tools, processes and materials and includes only such subject matter as should be taught to grammar grade students. A practical and unusually attractive textbook and one that meets the requirements of students working in large classes and devoting the minimum of time to manual training. 64 cents.

## **ESSENTIALS OF WOODWORKING—Griffith**

A textbook written especially for grammar and high school students. The standard textbook on elementary woodworking. A clear and comprehensive treatment of woodworking tools, materials, and processes, to supplement, but not to take the place of the instructions given by the teacher. The book does not contain a course of models; it may be used with any course. \$1.44.

## **TOOL PROCESSES IN WOODWORKING—Laughlin**

A text book of special value for beginning students in grammar or high school classes. Contains directions enabling a boy to work intelligently with usual woodworkers' tools. Suggests reference and experimental work for the ambitious boy. So organized as to provide equally well for the inattentive or slow boy and the absentee. Enthusiastically endorsed by many users. 84 cents.

## **WOODWORK FOR SECONDARY SCHOOLS—Griffith**

The most complete and comprehensive textbook on secondary school woodworking ever published. Treats of Common Woods, Tools and Processes, Woodworking Machines, Joinery, Wood-Turning, Inlaying and Wood Carving, Wood Finishing, Furniture Construction, Pattern-Making, \$2.64.

## **DEMONSTRATIONS IN WOODWORK—VanDeusen**

A successful textbook for country schools, consolidated rural schools and grade schools. It consists of a series of demonstrations each describing in detail the process of making one project. Each demonstration shows a photograph of the project in use and a working drawing and numerous illustrations of the tool processes required to construct it, with accompanying descriptions. With these "Demonstrations" one simple bench and a set of tools are sufficient to serve the average country school. Arranged in three parts, eight demonstrations in each part. Per part, 25 cents.

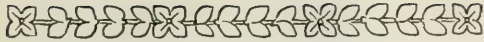
## **WORKSHOP NOTE-BOOK—WOODWORKING—Greene**

A small-sized textbook and note-book combined. It furnishes a few general and extremely important directions about tools and processes, and provides space for additional notes and working drawings of exercises and articles which the pupil is to construct. It is essentially a collection of helps, ideas, hints, suggestions, questions, facts, illustrations, etc., which have been prepared by a practical teacher to meet a real need in his own shop. 28 cents.

*Other textbooks for students of Mechanical, Architectural and Machine Drawing, Wood Turning, Pattern Making, Carpentry, Printing, Cooking, etc., are described in our new DESCRIPTIVE CATALOG. A copy will be mailed free on request.*

Correspondence Invited

**THE MANUAL ARTS PRESS**  
PEORIA - - - - ILLINOIS



#### PERSONAL ITEMS—(Continued)

Previous to that time he had taken summer courses at Bradley Institute, Stout Institute, and the University of Wisconsin.

PROFESSOR KENNETH G. SMITH of the State College in Iowa has become state supervisor of industrial education for Michigan. His headquarters will be at the state capital building in Lansing.

CHAS. E. LIMP has been elected Director of Manual Arts in the city of West Allis, Wisconsin. West Allis has recently completed a new \$1,000,000 high school and is showing a progressive attitude toward the development of industrial education.

EVERETT HOWTON has left his position as head of the industrial arts department of the high school at Paducah, Kentucky, and will take a similar position this fall at Williamson, W. Va. During the summer Mr. Howton is completing his work for a B. S. degree at the George Peabody College for Teachers.

MISS JEANETTE BEWLEY of Kansas City, Mo., has just been appointed Occupational Aide at the New England Vocational School, Rutland, Mass.

FRIENDS of Mr. Linley H. Dennis of the Bureau of Vocational Education, Pennsylvania Department of Public Instruction, will be glad to learn of his appointment as Director of this Bureau.

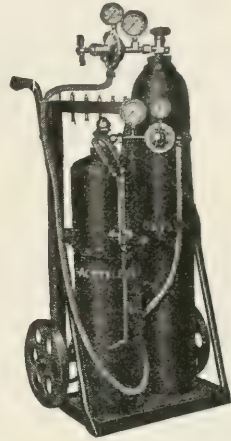
THE HOUSE CARPENTRY DEPARTMENT of the New England Vocational School, Rutland, Mass., has just completed nine large Poultry houses for the Agricultural Department. The class will soon commence the construction of a bungalow for the housing of some of the ex-service men now undergoing training at the school.

O. J. FRANKLIN has been elected to teach machine shop practice in the industrial department of the Williamsport High School. Mr. Franklin is a graduate of Stout Institute and has been employed as a machinist by the Illinois Central Railroad.

G. H. PARKES has been elected to teach drafting in the industrial department of the Williamsport High School. Mr. Parkes is a machinist by trade, a graduate of Purdue University, and is at present employed as a draftsman by the Pennsylvania Railroad.

PAUL L. CRESSMAN has given up his position as instructor in manual training at Uniontown, Pa., to accept a similar position in the Erie public schools.

## Imperial Equipment



One of the strongest demands now being made upon public and vocational schools, is for instruction in the use of Acetylene Equipment.

**IMPERIAL WELDING EQUIPMENT**  
OXY-ACETYLENE—OXY-HYDROGEN

represents the highest achievement yet reached in the use of the Acetylene Torch. It is Economical, Efficient, Safe, Speedy, Practical and Portable. Welds anything in metal and cuts everything in wrought iron and steel.

### Special Instruction Courses Furnished Teachers

With the Imperial Equipment, we furnish complete instruction courses, together with full charts, data, etc., which will be helpful in conducting practical classes in the use and operation of Imperial Outfits.

*Send today for Free Catalog and details on Imperial Equipment.*

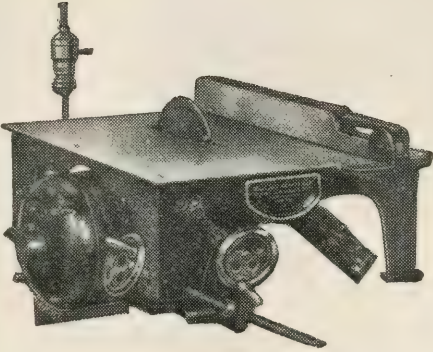
**The Imperial Brass  
Manufacturing Co.**

511 S. Racine Ave.

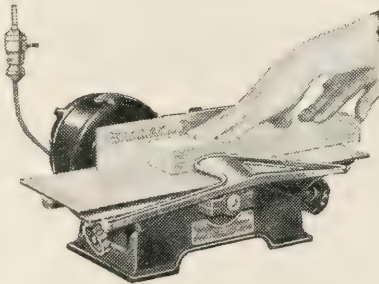
Chicago



# WALLACE BENCH MACHINES



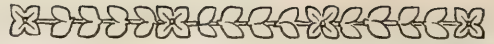
Over 1800 Wallace Bench Saws and 4- and 6-inch Jointers will be operating in schools and colleges this year.



Send for Catalog

**J. D. WALLACE & CO.**

1408 Jackson Blvd., Chicago



## TRADE NOTES

THE CHICAGO FLEXIBLE SHAFT COMPANY have just issued a new sixteen-page booklet on Stewart Gas and Oil Furnaces especially adapted to school shop needs. The front cover page shows an equipment which they have installed in the New Trier Township High School, Kenilworth, Ill. If one has any doubt about this firm's goods, it will be dispelled at once by reading on the fourth-cover page the list of high schools and technical institutes where Stewart furnaces are installed. This new booklet illustrates and describes all their furnaces suited to school shop requirements. A copy will be sent upon request.

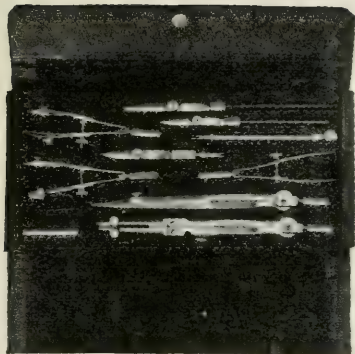


THE ABOVE CUT illustrates a new acetylene gas generator possessing some decidedly new improvements in acetylene gas generation.

Most important of the new features is the absence of weights, clock-work and complicated mechanism. The carbide feed is automatically controlled by the gas consumed by the torch—the generating of the gas automatically stops when the torch is extinguished and automatically starts generating when the torch is relighted, thus automatically maintaining a constant, even gas pressure.

The machine is of the medium pressure, carbide to water type, and is said to have but few parts; to allow no chance for back flashes; and to produce gas at one cent a foot.

It is manufactured by the Imperial Brass Mfg. Co., Chicago, Ill., who will be pleased to send additional information to those interested if request is made.



## Mechanical Drawing Instruments

**BUY NOW AND SAVE 100%**

Send for our catalogue and get our prices before you buy.

*Complete Sets Offered From \$3.90 to \$6.75*

**National Instrument Company**

4517 North Lawndale Ave.

CHICAGO, ILL.

## THE BEMIS STANDARD VISE

Fitted with a continuous, fast running double-thread steel screw, making it positive and quick. It will not slip, catch or let go. Buy of the Patentee-Beware of Infringements.

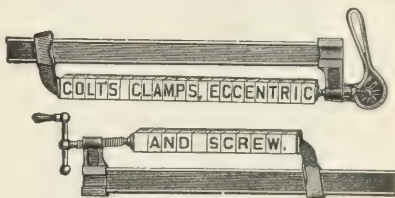
PRICES { No. 1, plain \$3.50  
No. 3, with dog, 3.75  
No. 5, with dog, 3.75

Send for descriptive circular.

**A. L. BEMIS**

71 Commercial St.

Worcester, Mass.



Forty styles of Quick Acting Clamps for the Worker in Wood, Cement and in the trades generally.

Your dealer will supply you.  
Ask for catalog No. 296.

**BATAVIA CLAMP CO.**

237 Center Street

BATAVIA, N. Y.

## V. & B. TOOLS

A Complete Line of

**Hammers - Anvil Tools - Tongs**



NAIL HAMMER

Every V. & B. Tool is individually tempered and tested.

Write for complete catalogue and Blue Print circular of hammers.

**VAUGHAN & BUSHNELL MFG. CO.**

Makers of Fine Tools

**CHICAGO**

## Mummert-Dixon Oilstone Grinders



The Modern  
Edge Tool  
Sharpening  
Machines.

The  
Standard  
for all  
Industrial  
Schools.

No. 481—Motor or Countershaft Drive  
An automatic attachment for grinding long knives can be furnished with this machine.

THE FIVE LEADING FEATURES:

- 1 Coarse Oilstone Wheel, 3 Grinding Cone
- 2 Fine Oilstone Wheel, 4 Leather Wheel
- 5 Emery Wheel. All at your finger's ends

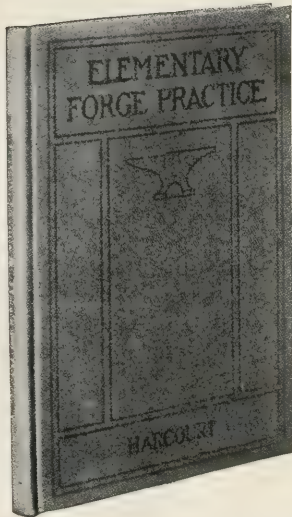
Send for full descriptive bulletin

MUMMERT-DIXON CO., Hanover, Pa.

# Just Published

*A BOOK on forging which meets in every way text requirements in high, technical, vocational and trade schools.*

## ELEMENTARY FORGE PRACTICE



**By Robert H. Harcourt**

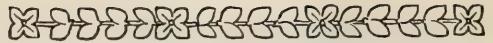
*Instructor in Forge Practice, Leland  
Stanford Junior University*

**A FAITHFUL** presentation of subject matter and an excellent aid in teaching. Offers 40 problems ranging from a simple ring to rock drills. Each problem is illustrated by full-page drawings showing the several steps, accompanied by explanatory text. Chapters on tools, materials, processes, etc. This is a new enlarged and revised edition of the book as formerly published by the author for use in his own classes. Unlike other books on forging this book is distinctly a student text. It contains information, but is not a reference book; it shows working drawings, but is not a problem book; it is not a treatise, but a successful text resulting from classroom and shop experience covering a period of years.

*Billed on approval for adoption.*

**Postpaid \$1.50**

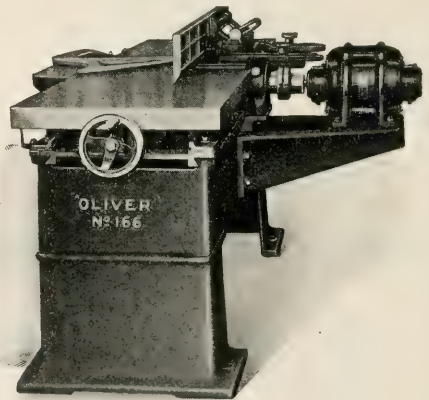
**THE MANUAL ARTS PRESS**  
PEORIA, ILLINOIS



## TRADE NOTES—(Continued)

MACHINE shop teachers and teachers of mechanical and machine drawing will find the little book "How to Make an 8-inch Bench Lathe in the School Shop" of particular interest. This book, size 5"x7" containing 64 pages is published by the South Bend Lathe Works. It gives complete assembly and detail drawings of an 8-inch bench lathe illustrated elsewhere in this issue in the advertising of this firm. Not only does the book give all detailed sizes and information necessary, but gives instructions for machining the lathe as well. To the teacher searching for new material of a practical nature this little book is a valuable one to have at hand. It can be secured by addressing the South Bend Lathe Works, and to teachers in this field is distributed without cost.

Machine shop teachers will be interested also to know that the firm is prepared to supply castings in the rough and finished parts, also blue prints.



A NEW MACHINE of special interest to wood-working teachers is the Hand Planer and Jointer, Oliver No. 166, manufactured by the Oliver Machinery Co., Grand Rapids, Mich. The machine is illustrated above. It is direct-coupled, motor-driven and ball-bearing, and is so designed as to permit the use of any current motor provided the speed is approximately 3,600 R. P. M. That is, it is furnished for direct current or for alternating current or for one, two or three phase in the various voltages. It is a compact, convenient and efficient machine, and is recommended for its smooth and accurate cutting.





## BOOK NOTES

THE newspapers of the country have kept the public well informed concerning the increased cost of print paper. The public is not so well informed concerning the great increase that has taken place in the cost of book papers, and binding materials. It is probably not generally known that standard grades of book paper have increased from 5-7 cents to 18-22 cents per pound during the past six years, and it is not well known that the present cost of bookbinding is alarming to one who thinks of book prices in terms of five or even two years ago. If a readjustment downward cannot be made in costs, as seems to be true, a readjustment must come in our thinking concerning the cost of books. Authoritative figures on cost in bookbinding have recently been issued by the J. F. Tapley Co., of New York. These show that the average increase in cost of book cloth since 1914 is 218.6% and that the average increase in the cost of labor in bookbinding during the same period is 135.9%. The gross average increase in the cost of binding is therefore 177.2%.

These figures with similar ones that might be given with reference to printers' wages argue for a readjustment in our thinking about the cost of books just as we have been obliged to readjust it with reference to groceries and clothing, but let us hope that the increase will not be as great. The change in prices has come more slowly in book publishing than in some other lines of business because book publishing is a comparatively slow-moving business but it is coming now. The cheapening of materials and quantity production cannot prevent the increase, even where that may seem reasonable. Books must cost more in the future.

JUST as we are writing this column a copy of *Vocational Education* by David Snedden comes from the Macmillan Company. This is a book that many readers have been waiting for, as it puts into permanent form the conclusions of the leading advocate of vocational education in this country. During the past few years Dr. Snedden has been the most prominent figure in the discussion of the content and administrative policy of vocational education as well as of its social need. To a discussion of these topics he now adds a chapter on method and then treats each of the main divisions of vocational education—commercial, industrial, homemaking and profes-

sional—in greater detail. Following these is a discussion of future problems.

A more extended reference to this book will appear in our Current Publications Department in a later issue.

MISS ADELAIDE MICKEL of Bradley Polytechnic Institute, author of *Leather Work*, has brought together in most attractive form just the information that teachers have been needing on the subject of *Stenciling*. She has given in detail the use of the various mediums of stenciling—water color, crayon, oil color and dye. Applying the color with brush and by spraying are described. Stenciling on different fabrics, and the mediums best adapted to these fabrics are discussed. The process of cutting various stencils is given.

After this technical descriptive matter come problems classified for use in the grades, beginning with the third and extending into the high school. In fact a large part of the book is taken up with line drawings, wash drawings and photographs of designs and completed objects upon which stenciling has been done. While these may be copied, the purpose is to give them in such a way and in such variety that they may be suggestive to students studying design in connection with a variety of handicrafts. Indeed the book might be looked upon as a book on the teaching of design, approached from the handicraft or construction standpoint, which after all is the practical standpoint that must be gained sooner or later by any successful designer for industry.

This book is now in process and will be issued early in the fall by The Manual Arts Press.

Another book which will soon be issued by The Manual Arts Press is *Elementary Machine Shop Practice* by T. J. Palmateer, instructor in machine shop practice at Stanford University. This is the outgrowth of the author's experience in teaching and in publishing two small pamphlets for the use of students in his own classes. The demand for these was so great that he was encouraged to write a more complete book on the same general plan. The method for the book is that of writing the text around specific problems. These problems, however, are so typical that the book is suitable for a textbook for students who follow a very different course. The book will provide a reasonably comprehensive, practical, reliable textbook at a moderate price.

Spanish Church  
By Earl Horte



"I like your Eldorado pencil for three reasons. It is friendly to my touch, responsive to my mood and it reproduces better than any other pencil I have ever used.

"A definite clear-cut quality is essential in every drawing that is made for high-light halftone.

"Even soft tones made with the Eldorado seem to carry a certain hidden depth that helps the camera.

"It is a fine, capable pencil and I like it very much indeed."

*E. Horte*

**DIXON'S  
ELDORADO**  
*"the master drawing pencil"*

**SAMPLE OFFER TO TEACHERS**  
Dixon's Eldorado is made in 17 leads. Tell us whether you teach mechanical or freehand drawing and we will mail you suitable samples.

JOSEPH DIXON CRUCIBLE COMPANY, Pencil Dept. 19-J, Jersey City, N. J.

## INDEX TO ADVERTISEMENTS

	PAGE
<i>Cabinet Hardware</i>	
Thurston Manual Training Supply Co. ....	xxv
<i>Chair Caning</i>	
Louis S. Drake, Inc. ....	xxv
<i>Clamps</i>	
Batavia Clamp Co. ....	xix
<i>Drawing Supplies</i>	
National Instrument Co. ....	xix
<i>Elementary Handwork Supplies</i>	
Thomas Charles Co. ....	xxv
<i>Forges</i>	
Buffalo Forge Co. ....	xiv
<i>Furnaces</i>	
Chicago Flexible Shaft Co. ....	2nd cover
<i>Furniture Designs</i>	
Clock Company. ....	xxv
W. E. Rodick. ....	xxv
<i>Grinding Machines</i>	
Greenfield Machine Co. ....	xxv
<i>Hammers</i>	
David Maydole Hammer Co. ....	xxi
Vaughan & Bushnell Mfg. Co. ....	xix
<i>Joiners</i>	
J. D. Wallace & Co. ....	xviii
<i>Lathes</i>	
Monarch Machine Tool Co. ....	xii
South Bend Lathe Works	xxi. . . and 3d Cover

	PAGE
<i>Lumber</i>	
Maisey & Dion. ....	xxv
Morgan Company. ....	xxv
<i>Metalworking Tools</i>	
North Bros. Mfg. Co. ....	xiii
L. S. Starrett Co. ....	vii
W. H. Porter Mfg. Co. ....	xxv
<i>Micrometers</i>	
Reed Small Tool Work	xxii
<i>Milling Machines</i>	
John Steptoe Co. ....	xxvi
<i>Oilstone Grinders</i>	
Mummert-Dixon Co. ....	xix
<i>Oxy-Acetylene Welding</i>	
Imperial Brass Mfg. Co. ....	xvii
<i>Patternmaking Equipment</i>	
Adams & Nelson Co. ....	xxi
<i>Pencils</i>	
Joseph Dixon Crucible Co. ....	xxiv
<i>Planes</i>	
Stanley Rule & Level Co. ....	xxvi
<i>Publishers</i>	
John Wiley & Sons. ....	v
Guy M. Jones Co. ....	xxii
The Manual Arts Press	xxvi
<i>Reed and Raffia</i>	
Louis S. Drake, Inc. ....	xxv

	PAGE
<i>Rules</i>	
Lufkin Rule Co. ....	xxi
Adams and Nelson Co. ....	xxii
<i>Sawing Machinery</i>	
Alexander Dodds Co. ....	xxv
<i>Saws</i>	
Henry Disston & Sons	ii
<i>Shapers</i>	
John Steptoe Co. ....	xxvi
<i>Soldering Supplies</i>	
L. B. Allen Co. ....	xxv
<i>Teachers Agencies</i>	
Tracing Cloth	
National Tracing Cloth Co. ....	xi
<i>Upholstery Materials</i>	
Grand Rapids Cushion Co. ....	xxv
<i>Vises</i>	
A. L. Bemis. ....	xix
Abernathy Vise & Tool Co. ....	xv
<i>Woodworking Tools &amp; Machines</i>	
American Woodworking Machinery Co. 4th Cover	
Crescent Machine Co. ....	xv
J. A. Fay & Egan Co. ....	ix
Montgomery & Co., Inc. ....	xxii
Sidney Tool Co. ....	i
Stanley Rule & Level Co. ....	xxvi
J. D. Wallace & Co. ....	xviii

# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.

WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City.

EDITORS FRANK M. LEAVITT, Associate Superintendent Public Schools, Pittsburgh, Pa.

WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON.

Published monthly by The Manual Arts Press, 237 N. Monroe St. Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

## CONTENTS

PROJECT TEACHING OF MANUAL TRAINING.....	<i>H. J. Whitney</i>	57
A SOLUTION OF THE "HIGH COST OF LUMBER" PROBLEM FOR HIGH SCHOOL CARPENTRY WORK (Illustrated).....	<i>E. E. Ericson</i>	61
A PRACTICAL METHOD OF KEEPING CLASS RECORDS AND PROMOTING CO-OPERATION AMONG VOCATIONAL SCHOOL SHOPS (Illustrated).....	<i>George A. Willoughby</i>	69
EDITORIAL REVIEW FOR THE MONTH.....		71
The Mid-Western Meeting in Minneapolis—Need of a Professional Attitude—Professor Griffith goes to Wisconsin—Junior Achievement Bureau—Art and Community Betterment in Illinois—More Shop Experience for Engineering Students—A Million Dollar Bequest.		
A POINT OF VIEW.....	<i>Arthur Dean</i>	75
WASHINGTON CORRESPONDENCE.....		--
The New Education in the Navy.		
IN FOREIGN COUNTRIES.....		80
Employers and Education—Success of Vocational Schools in China—Attendance increasing in German Polytechnic Schools.		
PROJECTS, PROBLEMS AND NOTES.....		83
A Few Practical Suggestions—Projects in Carpentry, Cabinet Making, Sheet-Metal Work and Machine Shop Work—The Length of Wood Fibers—The Fading of Blue-prints—Zinc for Etching—Cleaning the Soldering Iron.		
CURRENT PUBLICATIONS.....		90

Field Notes—Trade Notes—Book Notes.

*This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.*

Entered at the Post Office at Peoria as Second-Class Matter. Copyright, 1921, The Manual Arts Press.





## FIELD NOTES

### AROUND NEW YORK

**P**LANs for getting 800,000 young men and young women under eighteen years of age, who are at work in New York state, back to school for at least four hours a week, were discussed at the conference on part-time schooling, arranged by the State Board of Education, and held at the State Normal School, during the week of July 12. The department invited a group of specialists from other states, where continuation schools have been in operation for some years, to give the benefit of their experiences, not only to school officials, but also to employment managers and placement directors in establishments that are large employers of labor.

One of the chief problems considered was the training of 2,000 teachers who will be needed, and the housing of the pupils. The law gives the school authorities in every city or school district with over 5,000 population, until Sept. 1925 to establish sufficient schools or classes to provide instruction for all children between fourteen and eighteen, not in attendance upon the regular full-time schools and a substantial beginning must be made by next September.

Lewis A. Wilson, director of the division of agriculture and industrial education, at the opening conference, outlined the problem that the school people and employers have to meet in bringing back to school the 400,000 workers under eighteen years who have not been graduated from high school. He emphasized the great importance of providing a type of schooling that will hold their interest, for a majority of these young people have quit school not because of economic pressure, but because of lack of interest in school studies.

It is the opinion of the department, Mr. Wilson explained, that the part-time schools should try to make the break between the school life of the child and the work life of the child less difficult thru some properly adjusted plan of vocational guidance and vocational training, which will take into consideration the individual's duty as a citizen and his potentialities as a worker.

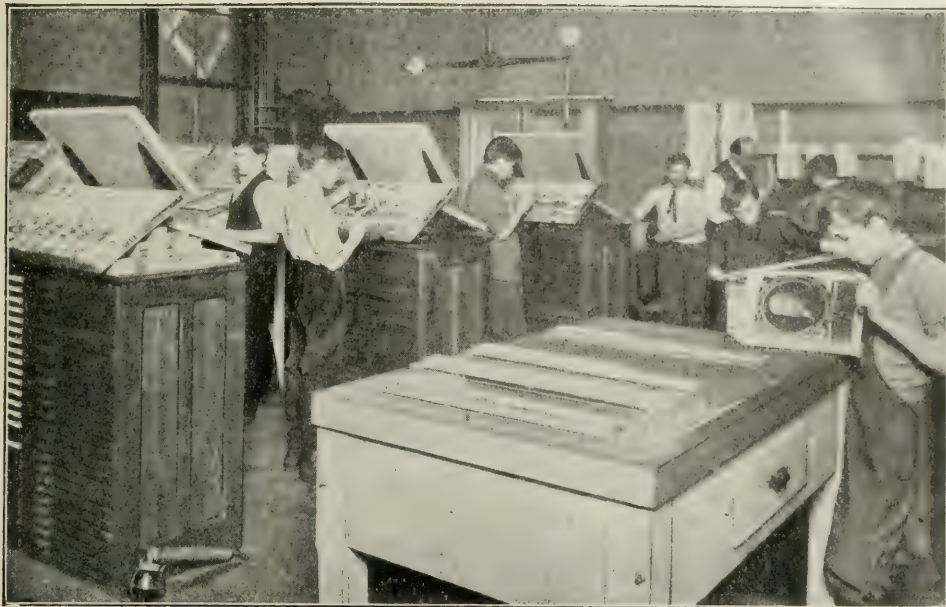
Mr. Wilson stated that the part-time school in New York State will concern itself with an elementary explanation of those institutions that society has developed for its protection and perpetuation, and for the welfare of the individual. It will help the child to choose a vocation, to improve his leisure, and will serve to make him a better citizen. In so far as possible it will give a definite training for the vocation the child chooses, and in which he is engaged.

Principal Owen D. Evans, of the Boston Continuation Schools, spoke on the purpose of part-time education, laying stress on the fact that continuation classes were organized not merely to train youth for useful occupations, but to prepare them better for participation in the political life of the state as citizens. In order to accomplish these aims they must be related to community needs and must offer instruction, not only in commercial and industrial subjects, but also in home-making. The attendants at continuation classes or schools would be of such a varied character as to require instruction largely individual in character, with a great deal of self-activity on the part of pupils. He advised the school officials attending to keep always to the fore the importance of accepting responsibility for the proper placement of children in suitable employments. The continuation classes serve children between fourteen and eighteen years of age, and during those years they frequently change employment. The part-time schools should lead boys and girls to positions that offer the best chances for personal advancement.

While New York State has only started her continuation classes, other states have had them in operation for a number of years. In September 1920 nineteen states will have continuation classes in operation. The State Department made it clear at the conference, that, while the responsibility for starting and conducting classes rests with the school authorities, manufacturing and other establishments may conduct them subject to the supervision of the school authorities. Attendance is obligatory for not less than four nor more than eight hours a week, for 36 weeks between the hours of 8 A. M. and 5 P. M. Instruction shall include American history, the rights and obligations of citizenship, economics, and the essential features of the laws relating to industries in every course. Equipment shall be suitable and adequate. The department does not recommend any instruction that would require or discourage attendance at evening schools in addition to continuation schooling. It favors the organization of central schools wherever possible.

A new cooperative high school is to be opened in September in Public School 44, Manhattan, N. Y. Fifteen rooms are to be used to accommodate 1,000 pupils on the alternate week plan. Under this plan 500 pupils will attend school one week, while the other 500 are employed in the business world, the two groups alternating each week between school and business.

R. Wesley Burnham, chief coordinator of co-



Columbus Trade School, Columbus, Ohio

# PRINTING

## As a Prevocational Subject

**P**PRINTING combines virtually all the desirable features that are required of the ideal manual activity in education. Printing is an art in which the raw materials are words—words of all languages—requiring in its finished product a utilization of the principles of nearly all academic studies. Included in these studies are grammar, reading, spelling, punctuation, word division and capitalization.

Printing is a manual activity that dovetails in with nearly all educational devices, yet it provides an opportunity of teaching the technical processes of an art in which the opportunities for employment are unlimited.

## As a Vocational Subject

**T**HE Printing Industry needs workers—competent and well-trained men in all branches of the industry. This situation offers a splendid opportunity for schools to train direct for an industry which ranks fifth in importance in the United States. Employers and employees are fully alive to the seriousness of the shortage of workmen in the printing and allied industries and probably would welcome a suggestion to co-operate in apprentice education. Several schools are now furnishing education in printing. Information regarding these schools and suggestions regarding co-operation between educators and the printing industry will be sent on request.

EDUCATION DEPARTMENT

## AMERICAN TYPE FOUNDERS COMPANY

300 Communipaw Avenue, Jersey City, New Jersey

Set in Century Schoolbook type—appropriate for school printing purposes.



FIELD NOTES—(Continued)

operative courses, has been selected as principal. In selecting Mr. Burnham the board of superintendents has nominated the man who has probably had the broadest experience in cooperative and high school work in the city school system. He was graduated from Amherst in 1895 with the degree of A. B., and was elected at that time as a member of the Phi Beta Kappa. Columbia University awarded him an M. A. in pure science in 1914. That same year he also received an M. A. from Teachers College. He has completed the required work at Teachers College for a Ph. D. and his thesis is now in preparation. He also holds a certificate in machine work from Pratt Institute.

Mr. Burnham entered the teaching profession in 1895 as a teacher of science in the Gloucester, Mass., High School, where he remained for four years. In 1899 he was appointed teacher of science in the Erasmus Hall High School, Brooklyn, leaving there in 1915 to accept the position of coordinator in the Curtis High School in Richmond. From 1903 to 1914 he conducted evening classes at Pratt Institute in Brooklyn, and from 1914 to 1917 was instructor of trade teachers' training classes at the same school. During 1918 and 1919 he was in charge of vocational training classes at City College, and has been identified with the teachers' training classes of New Jersey Department of Education.

Mr. Burnham has also had considerable supervisory experience, having been assistant principal at Gloucester High School for three years, and in New York City, chief coordinator of the cooperative and continuation classes since 1916. For the past two years Mr. Burnham has been principal of the Pratt Institute Evening School of Science and Technology.

W. H. DOOLEY.

A RECENT report shows that 29 cities and towns have adopted the plan of public school safety instruction worked out by Dr. E. George Payne, principal of the Harris Teachers' College of St. Louis, in co-operation with the National Safety Council, and that 150 other cities and towns have promised to adopt the plan. It shows that all the schools in the cities and towns and 50 per cent of the country schools of Texas are now teaching safety, and that two counties in Mississippi and one county in Minnesota have promised to adopt the plan. Similar pledges have been received from 80 per cent of the school superintendents of cities and towns in Ohio and of 29 state superintendents of schools who have replied to the Council's letter on the subject, 20 promised co-operation.

Dr. Payne reports that the coroner's records in St. Louis reveal the fact that during the first six months of 1919 there were 25 children killed by accidents, while during the corresponding months of 1920, during which time every school child had received safety instruction, there were only nine killed. One of these deaths was caused by a treet car and seven by automobiles.

THE LATHROP TRADE SCHOOL and the Lincoln Trade School in Kansas City have been busy during the summer. The Lathrop print shop has had ten students who worked eight hours a day and were paid from fifteen to thirty-five cents per hour according to individual ability. They were getting out educational pamphlets, record cards and report blanks for the school board, and had work to keep them busy all summer.

The Lathrop cabinet shop worked fourteen boys in making tables, filing cases, gymnasium apparatus and other equipment for the school board. The painting class is doing both interior and exterior decoration of school buildings. The electrical classes have undertaken about \$10,000 worth of house wiring for the school board. One class of six boys overhauled thirty-four motors for the school in one week. The Kansas City school board has appropriated \$25,000 for a new unit trade building at Lathrop. This building will be constructed by the boys.

The Lincoln trade classes are doing much work in carpentry, masonry and painting in the way of repairs on the school buildings thruout the city. They have also undertaken the erection of a four-room stucco school building.

The recent industrial survey in Jefferson City, Mo., resulted in the recommendation to the city school board that provision be made to install carpentry, printing and auto repairing in the high school as a part of their vocational work.

THE MANUAL TRAINING DEPARTMENT of the Tulsa, Oklahoma, City Schools under the direction of N. O. Horning has completed its most successful year. The display of furniture shown at the annual school exhibit May 26-27-28 was only a small part of the real work done. The value of the completed articles can be easily computed but the educational value to the 2300 boys who have participated in this work is beyond the realm of figures.

A total of 4000 articles were completed with a conservatively estimated value of more than \$11,000 and a cost to pupils of \$3,500. More than 100 different kinds of articles were made, some of which are as follows: 41 library tables, 25 writing desks and tables, 105 upholstered stools, 188 foot-





## *MAKE STUDENTS COMMUNITY BOOSTERS*

**T**HEY are happy and enthusiastic when they are partners in the big things which are going on around them. Inherently they are men. Make them feel they are necessary to the success of the community. Give them real tools and equipment to work with. Boys studying forging and blacksmithing should be given forges that are easy to work with, convenient, and trouble-proof. Most technical and manual training schools have Sturtevant Forges. That is a good reason why you should find out more about them. The same care in design and manufacture which is molded into all Sturtevant apparatus is in Sturtevant Forges. Ask us about our complete Forge Systems.

**B. F. STURTEVANT COMPANY**  
**HYDE PARK, BOSTON, MASSACHUSETTS**

**AND ALL PRINCIPAL CITIES**



# Sturtevant

Reg. U.S.  
 Pat. Off.

**PUTS AIR TO WORK**



## Standard Equipment

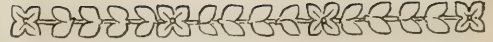
Blacksmiths in all parts of the world use Buffalo Forges and Drills in regular work because they are standard. Buffalo equipped trade schools and manual training departments insure working under practical conditions.

Our Engineering Department will be glad to give you accurate data on blowers, exhausters, forges, motors piping, etc., and in making out your plans. Nearly forty years of experience has placed us in a position to satisfy your wants.

*Write for catalog 205-31.*

**Buffalo Forge Company**  
BUFFALO, N. Y.

*"Buffalo"*



### FIELD NOTES—(Continued)

stools, 23 piano benches, 36 pedestals, 133 book and magazine racks, 72 table lamps, 12 floor lamps, 65 indoor bats, 66 smoking stands, 31 porch flower boxes, 4 folding screens, 4 bedsteads, 29 cedar chests, 1 Queen Ann mahogany extension dining table, 53 telephone stands, 121 hall trees, 77 costumes, 85 taborets, 5 dressing tables, 1 grand graphanola cabinet, 7 step ladders, 3 serving tables, 88 sleeve and ironing boards, 3 rocking chairs, 5 chairs, 13 porch swings, 10 tool chests, 2 sewing cabinets, 6 kitchen tables, 7 water bottle holders, 86 sleds, 16 medicine cabinets, 18 tea tables, 2 buffets, 3 flat top desks, 1 canoe and paddles, 39 pairs of stilts and a great many smaller articles.

Besides the work on individual projects a large amount of work has been done in each of the shops for the schools. Some of the larger pieces of work are as follows: manual training shop at the Mark Twain school, 10 cafeteria tables at the Celia Clinton shop, 6 typewriter tables at the Irving shop. The Washington classes made the largest showing by completing the following: 1 tent house 16' x 16' for the open-air school, roofing and siding two other buildings for open-air school, 6 typewriter tables, 10 cafeteria tables, and many other smaller jobs for the various rooms and departments of the school. Practically all of the stage settings for the plays given by the school were made in the high school shops and the art department.



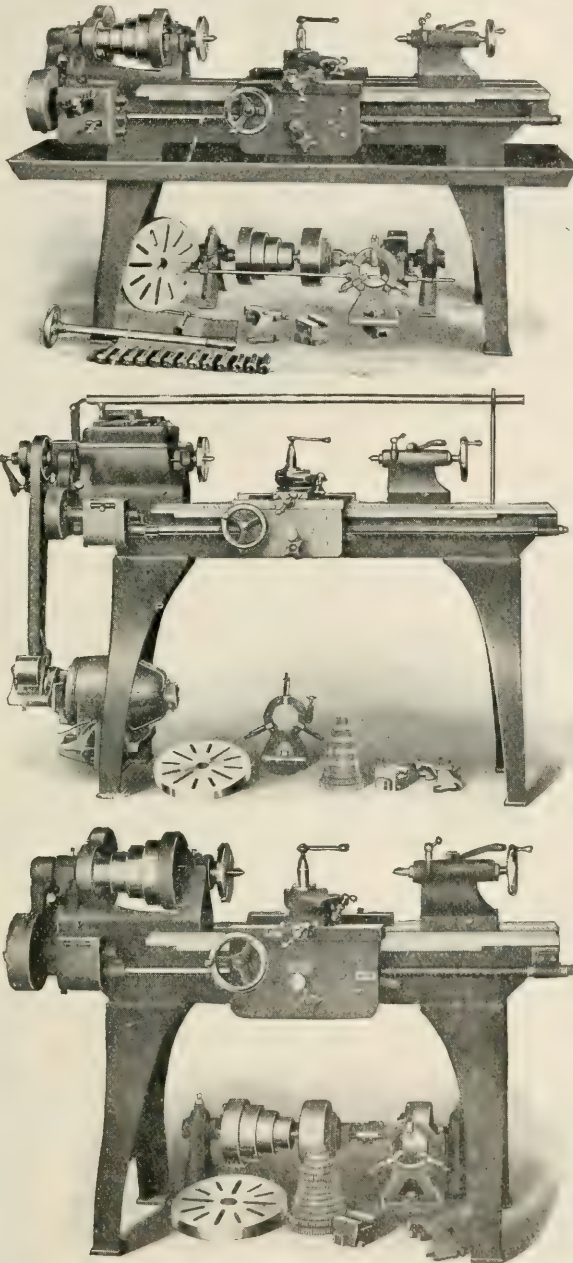
THE ACCOMPANYING ILLUSTRATION is from a postal card designed to advertise the Radio Club of the Elijah D. Clark School, Bronx, New York City. On the card there is a message in the International Wireless Telegraph Code.

The club was organized by Dr. Herman V. Bucher, who is in charge of the manual training work in the school and who has been for many years an amateur radio worker. The work undertaken by the Club has been outlined with the assistance of Erwin E. Bucher, chief instruction engineer of the



12" AND 14" SWING

W  
O  
R  
C  
E  
S  
T  
E  
R  
  
L  
A  
T  
H  
E  
S



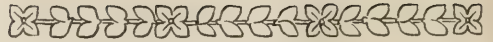
W  
O  
R  
C  
E  
S  
T  
E  
R  
  
L  
A  
T  
H  
E  
S

Cone or Geared Head. Single Pulley or Motor Drive. Quick or Semi-Quick Change Feed.

Manufactured by

WORCESTER LATHE CO., Worcester, Mass.





#### FIELD NOTES—(Continued)

Marconi Wireless Co., of America. The lessons have been adapted to the needs of the boys by Robert V. Bucher, late master signal electrician of the U. S. Army Signal Corps.

The course consists of sixty lessons running thru four terms, fifteen lessons of one hour each term. The course includes both theoretical and practical work and visits to radio establishments. The Club meets once a week after school hours. There is an initiation fee of \$1.00 and weekly dues of 10 cents per member. The greater part of the apparatus is constructed in the woodworking shop.

MEMBERS of the Chamber of Commerce in Cincinnati, Ohio, believe that it would be well to give the older school children a glimpse into the possibilities that Cincinnati business life holds out to them, and so the Chamber has become sponsor for the Civic and Vocational League to which 6,000 boys and girls in the upper school grades belong. Leaders in the city's business and civic affairs have often addressed the children on 'Change or taken them to various industrial plants and given them a chance to see and learn and become interested in the broader life of the city.

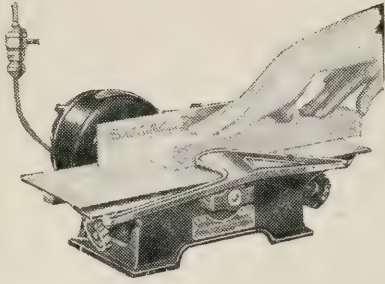
THE SCIENCE of motor mechanics has been voted the most popular study in the chain of elementary and vocational schools operated on a nationwide scale by the Knights of Columbus for demobilized service men. The idea of being able to master the intricacies of a gasoline and electric engine has made a rather strong appeal to the veterans, and the Knights have developed their motor mechanic classes to a very efficient degree. More than 25,000 students are attending the courses in the sixty-five schools out of a total of 125,000 pupils.

UP TO OCTOBER 1ST the U. S. Civil Service Commission, Washington, D. C., will receive applications for positions as assistant teachers to be paid salaries ranging from \$1,400 to \$1,800 a year. Teachers in trade and industrial and technical subjects must have the following qualifications:—

Completion of the first five grades of common school, together with (a) additional instruction in either technical or trade and industrial courses, or (b) the completion of an organized apprenticeship course of not less than three years' duration, and in addition to (a) or (b), at least two years' experience in the pursuit of the trade or occupation studies, or two years' teaching experience in technical, trade or industrial subjects.

Applicants should write for form No. 1312.

FOR SIXTEEN YEARS, Hart Shaffner & Marx of Chicago have provided funds to carry on a prize essay contest on economic subjects. The first



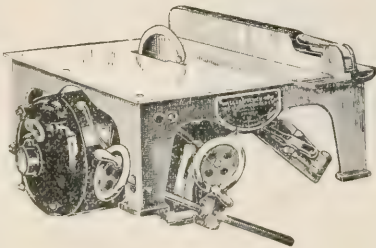
"These *Wallace* Bench Saws and Planers which we received from you are all, and more, than you claim.

They will do all the work and more conveniently.

As soon as funds are available, we expect to put these machines in all our Grade School Manual Training Shops—N. O. Horning, Supervisor—Tulsa City Schools.

## J. D. WALLACE & CO.

1408 Jackson Blvd., Chicago





## *The Finish Is Important!*

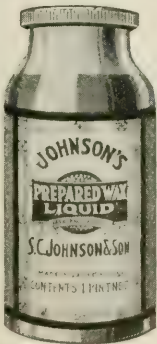
**S**URELY this is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

### **JOHNSON'S WOOD DYE**

Is just the preparation for staining models. It is very easy to use—goes on like oil without a lap or a streak. It is made in 14 attractive shades—which may be easily lightened and darkened. Over the dye apply a coat of

### **JOHNSON'S PREPARED WAX**

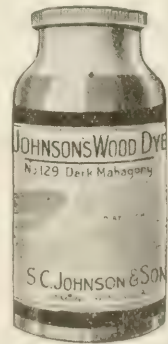
This gives a soft, artistic finish of great beauty and durability. It is clean and easy to use and economical—no tools or brushes required—all you need is a cheesecloth rag.



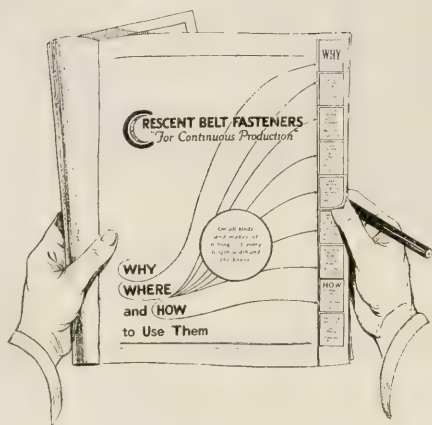
Johnson's Prepared Wax is now made in Liquid form as well as Paste. The Liquid Wax polishes instantly with but very little rubbing.

Write for our booklet on wood finishing. We are glad to furnish it free to Manual Training teachers and pupils.

**S. C. JOHNSON & SON,**  
 "The Wood Finishing Authorities"  
 DEPT., MT., RACINE, WIS.



# The 1920 Handbook on EFFICIENT BELT JOINING



## Here's a book to Make Your work easier

It is the most complete and practical handbook ever attempted on the important subject of belt joining. Every condition of belt service is completely and accurately covered. The ready reference indexing enables you to turn instantly to the class of work you are considering. It will help you solve the belt joining problems that daily confront you and will be of invaluable assistance to you in demonstrating to your students the proper means of making effective, economical belt joints.

A copy is yours for the asking. Demonstration samples furnished on request.

Address our Educational Service Department.

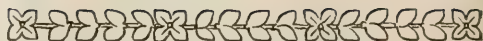
**Crescent Belt Fastener Co.**

381 Fourth Ave., New York

Canadian Branch:

32 Front St., West, Toronto, Canada

**CRESCENT**  
*Make Good Belts Give Better Service*  
**BELT FASTENERS**



## FIELD NOTES—(Continued)

prize is \$1,000 and the second \$500. The papers are judged by a committee of the country's leading experts, of which Professor J. Laurence Laughlin of the University of Chicago is the chairman. The list of topics for the year 1921 has already been announced and includes the following: "The probable future of the skilled artisan," "What forms of education should be advised for the elevation of wage-earners from a lower to a higher industrial status in the United States?," "How far does the earning power of skill obtain under a regime of trade-unions?," "Agricultural education."

FROM the Los Angeles *Times* we learn that the first of a group of trade schools to be developed under a plan of cooperation between the industries, the Chamber of Commerce and the vocational training department of the public schools has been organized and equipped in Los Angeles. The new school is to train workers for the wearing apparel and allied industries. The equipment is being furnished by the industries. "The course of study, while primarily to turn out operatives for the trade, will be so rounded out as to include the proper subjects necessary to make graduates not only efficient employees of wearing apparel concerns and allied industries, but good citizens as well."



THE ABOVE ILLUSTRATION is from one of the prize-winning posters in the recent poster contest of the American Humane Association. Thousands of children and art students in all parts of the United States participated in this contest. Art instructors in public schools quite generally cooperated because it gave their pupils a definite goal to work for and encouraged originality and initiative.



# Manual Training Magazine

SEPTEMBER, 1920

## PROJECT TEACHING OF MANUAL TRAINING<sup>1</sup>

H. J. WHITNEY

Head of Department of Vocational Education, State Normal School  
Ellensburg, Washington

RECENT numbers of this magazine and other good publications have emphasized the necessity that manual training teachers have a well recognized theory back of their work, and further, that the value of the work of any teacher is in direct ratio to the clearness with which this theory is comprehended and followed in practice.

It may be that what follows may present no new thought, but as it is necessary to have several views to completely delineate any complicated structure, so it may be that what follows will give another view of the complicated structure of educational theory back of manual training, and may therefore clarify our thinking and help to bring our practice in line with the theory.

### REASONS FOR THE IMPORTANCE OF THE "WHY."

Theory, as I use it, is but the reason for what we do. It is the "why" we follow certain practices. We are all too prone to do what we do because someone else has done it, or because it was suggested in any one of the numerous publications. These suggestions are usually most excellent, for each one represents the solution of a typical project in some particular environment, but if any one of these suggestions is adopted *in toto* in some other environment, it may then come far short of being a project.

The doctor who administers ether and removes the appendix or the tonsils without reference to the "why" will not long be trusted to do any form of surgery. An architect who puts into his plans a timber of a certain size without reference to the "why" is brooking disaster. Now disaster is as likely to follow the work of a teacher who does not understand the "why," but when you compare the disaster of misdirected lives with that of a ruined building, you can see how much more important it is for the teacher to understand the reasons for his actions. An architect may copy from another and thus avert the result of his unconsidered action, but can we safely do this when dealing with human beings, for every individual is a case by himself and must be studied and dealt with accordingly.

In the process of the union of the egg and sperm cells there are, as one authority puts it, a possibility of 500,000 different combinations. How exceedingly difficult it is to get two individual cases alike when this native equipment, which is the outgrowth of the union mentioned above, is acted upon in different ways by the thousands of experiences that each child has had. But while no two individuals are alike and must therefore be dealt with individually, there are certain ways of development that are the same for all. If you put yeast and sugar and wheat flour together, you have wheat bread; if you put in rye flour, you

<sup>1</sup> The author wishes to acknowledge his debt to Dr. Wm. Kilpatrick of Columbia University, whose article on "The Project Method" appearing in *The Teachers College Record* for September 1918, and whose classroom lectures have been freely drawn upon.

have rye bread, but the law that governs the action of the yeast is the same in both cases. In dealing with humans, we start with different material; tho the laws of mental development are the same for all, the product is different. May I say that it is these laws of mental development that we as manual training teachers must take more cognizance of. To revert to the illustration of the architect, he must take into consideration the laws of gravity, wind pressure and other laws when planning his building. In deciding whether or not to give an exercise for its own sake to develop skill when the need for skill is not apparant to the boy's mind, do we ask the question "What is the theory here?" Would you agree with me that an exercise given under the conditions stated above does violate the laws of learning?

#### DEMOCRATIC AIMS IN EDUCATION.

Our society has come to the place where it is demanding true democracy; democracy not alone in the exercise of political rights, but in the home, the school, and in every form of social activity. Probably the most of us would agree that democracy is a spirit, a way of working together. "It defines the rules of the game." So democracy is nothing tangible in itself, but it may result in something tangible, as the spirit of democracy may develop a certain kind of school organization, or a certain form of government.

The purpose of the school, as I see it today, is to develop individuals who are good members of a democratic society, and I say *are* instead of *will become*. Thus the school must take individuals, no two of whom are alike, and arrange to give them such experiences as will develop this spirit of democracy and will enable them to work skillfully in one or more lines of endeavor. In other

words, the school must create such an environment that each child will receive a liberal or cultural education and a vocational education. The spirit of democracy in the way I have used it includes all that is desirable in the term cultural education, and to be able to work skillfully in one or more lines of endeavor, is vocational education.

A democratic society demands that each individual shall have wide interests, be self-reliant, resourceful and social. A person who has wide interests will see the significance of his work in relation to that of others and to society in general. It will tend to make an artisan out of every worker. By self-reliant, I mean the disposition to undertake and to "carry on." This takes courage. But it is right here that so many young people fail; they lack the courage to tackle the job. They are not self-reliant. By resourceful, I mean ability to size up a situation correctly. Here is where knowledge and skill come in, but it is ability to use knowledge and skill that counts. By social, I mean: first, a disposition to co-operate and skill in co-operation; and second, a knowledge of when and where to apply the co-operative energy. A person may be disposed to co-operate but spoil things by lack of skill, as a child wants to help his mother and spills the milk. Again, one may spend all his co-operative energy skillfully to the boosting of some political party to the neglect of his church or his home. If he does this, he is to that extent unsocial. A teacher may devote all his energy to the schoolroom and neglect his association with other forms of organized social effort. To some extent then this teacher is unsocial.

Widely interested, self-reliant, resourceful and social people can adapt themselves to an ever changing environment, which is implied in a democratic society. Com-

pared with today, for more than a thousand years before the Industrial Revolution, society was static. A boy could be educated by his father and take his place in society, but today this is impossible; things are changing rapidly, hence adaptability is necessary. Wide interests help adaptability and form a basis for self-reliance, for resourcefulness and for right social action.

*Summary:* A democratic society must have democratic individual members. To be a valuable member of society, one must have wide interests, be self-reliant, resourceful, and social. It is the duty of the school to develop such people. Such is the aim of our school work in general, and of the manual training in particular.

#### PROJECT TEACHING IN ITS RELATION TO DEMOCRATIC IDEALS IN EDUCATION.

A project is any activity purposed by an individual and by him carried thru. The laws of learning by which mentality develops may crudely be stated thus: Mind has a physiological basis; it is the register of what we have experienced. Learning, then, is making a new entry on the register. Again, man learns when he has to, or when he is up against a difficulty, and human instincts are "but the reflection of past racial necessities." The result of all these racial experiences, physiologically, is a nervous system so organized that when a difficulty presents itself, the body is immediately ready for action. Now let us say that a difficulty recognized is a problem, and when an individual purposely sets about solving this problem, it becomes for him a project. Because of his purposeful activity his muscular activity is more accurate and success is more likely to be attained, and remembering, (adding to the register) is much better, and the thoughts which accompany such action are social thoughts

and right ideals are built up out of such action.

What we get then from purposeful activity (the project) is more efficient effort, resulting in success, right attitudes toward the work in hand, toward school and life, also good standards of work and ideals. The result of non-purposeful activity is just the opposite—inefficient effort resulting in failure. There can be no success, for success is attaining the end in view, and there is no such end in non-purposeful activity. There is no remembering of desirable things, no skill acquired; poor attitudes toward the work in hand, toward school and life are fostered, therefore poor standards and low ideals are the result.

I have endeavored to make clear, in order to most effectively make use of the laws of learning, the necessity of the presence of a difficulty, moreover the necessity that the person recognize the difficulty (problem) and accept it and purposely set about finding a solution (project). Now life is but a series of purposeful or non-purposeful activities. Every purposeful act presupposes a difficulty. Now to attack this difficulty requires self-reliance, and to solve it requires resourcefulness.

We see then that the project furnishes opportunity to develop directly those qualities that we deemed so important in members of a democratic society; namely, self-reliance and resourcefulness. Now if many projects are developed in the proper social environment, there is then furnished the opportunity to develop wide interests and a right social spirit.

*Summary:* Project teaching, which means the furnishing of such a stimulating environment that individuals will react purposely and wholeheartedly, will develop those qualities in its members that a democracy most needs.



MANUAL TRAINING IN ITS RELATION  
TO PROJECT TEACHING.

There are at least four types of projects that boys will enter into wholeheartedly: First, where the purpose is to enjoy some delightful experience, as listening to music, reading an interesting story, looking at a picture, playing, etc.; second, where a difficulty is to be solved, as getting arithmetic lesson, a lesson in geography: third, where skill is to be acquired, as learning the use of the plane, learning the multiplication table, spelling, writing, etc.; fourth, where the purpose is to be embodied in some outward form, as writing an essay, making a chair, table or bookcase, etc.

Projects are then not limited to something we make or can make in the shop, but include all phases of school work. The project is the subjective side of learning and is in the mind of the individual. What the school does is to so arrange the environment and furnish the curriculum material that projects will arise in the minds of the children.

All normal boys love activity for its own sake. They care not so much what they are making as that they are making something, therefore they will accept as purposeful activity almost any kind of activity that the skillful teacher may present, provided its usefulness is apparent. The task of the manual training teacher then is not so much to get purposeful activity as to get fruitful activity, activity that will lead on to other fruitful activity.

I believe then that the emphasis of upper grade manual training, if not of all industrial arts work in all the grades, should be on habits and attitudes. Habits of self-reliance, resourcefulness and of making wise choices and correct judgments. We want to foster shop neatness, love for work, and promote such organization as will make better work possible.

What of skill is developed is purely a secondary matter, for the child has not yet reached the vocational period.

What does this type of teaching manual training demand? Briefly this: a large room, well lighted, well ventilated, well equipped and well kept, with tools in place by every class for every class. There will be tools for participation in many kinds of socially valuable activities, such as drawing, woodworking, metal-working, printing, electricity, photography, shoe mending, etc.

Projects will arise here because of school demands or home and community demands. The teacher is the big factor. His duty is to create the environment, stimulate to self-reliance and resourcefulness, see that fair play is had, and that shop order and shop methods are as much projects as the actual construction work.

Not all the boys will react normally to this environment as described, for some are already spoiled and are pathological cases. They will have to be treated to medicine, and that sometimes bitter. But the fact that some boys have to be treated with authority, is no argument against project teaching, but is a big argument for the teacher having a workable theory back of his practice. He should be able to pick out the pathological cases and to treat them according to the nature of the ailment.

In closing, I wish I could emphasize more than I have the important function of the teacher. If it is habits and attitudes we are to be most concerned about, the teacher must be first a *man*. And I mean a man whose habits of life are above reproach, and are such that any father would be glad to have his boy pattern after the teacher. Second, he must be a good organizer, and skillful director, for he can do much thru

shop organization to get proper social action. Third, he must be a skillful workman in order to gain and retain the respect of the boys. Lastly, he must be a student of human behavior. It is not sufficient to sympathize with boys, he must know boys, and this means a working knowledge of psychology and philosophy of education.

*Summary:* Project teaching of manual training is the most difficult kind of teaching, but withall the most fruitful, for it furnishes the opportunity to develop those qualities of manhood that our democratic society most needs today, and it enables one to make most effective use of the laws that govern the development of all human beings.



THE JOB IS DONE, AND WE DID IT

### A SOLUTION OF THE "HIGH COST OF LUMBER" PROBLEM FOR HIGH SCHOOL CARPENTRY WORK

E. E. ERICSON

Director of Manual Training, Okmulgee, Oklahoma

**A**T THE close of the first semester last year a group of boys were to be promoted from the eighth grade into our high school. It was known previous to the time of the promotion of these boys that some of them would apply for work in manual training.

While we were seriously trying to organize a course for these students that would add materially to the scope of work that they had covered in the grades and which would at the same time be limited in expense to our capacity for buying materials at that time of the



year, a very unexpected solution to the problem came into our hands. This solution appeared in the form of an offer from the Minnetonka Lumber Company of this city to furnish all materials, including lumber, paint, and hardware for a four room play house; provided that the school would agree to do all the work required to carry the house to its completion, and then turn it over as a gift to the United Charities of the city.

Since this was the very type of work that we should have planned for the boys had we not been held back on account of the expense, it is needless to say that the offer was promptly accepted. In a conference with the manager of the lumber concern which followed, it was agreed further that a class in architectural drawing which was then about to complete one semester's work in that subject should be given the opportunity to plan this miniature bungalow, and to make complete drawings for it, obtaining general dimensions from some sketches that were already on hand. This gave a splendid opportunity for the class in drawing to work out a real, practical problem something that was actually going to be built. The four accompanying drawings were worked out, traced, and blue printed, and were subsequently used thruout the process of construction of the house. Additional sketches of the framing and other parts of the building were worked out by the carpentry class later.

A bill of materials was worked out and found to be very nearly correct. Some substitutions were made in it however, partly because some items were not obtainable, and partly for the reason that some materials were found that proved to suit the purpose better. The bill which appears in this connection is the revised one. It is a list of all the materials that were ordered for the house.

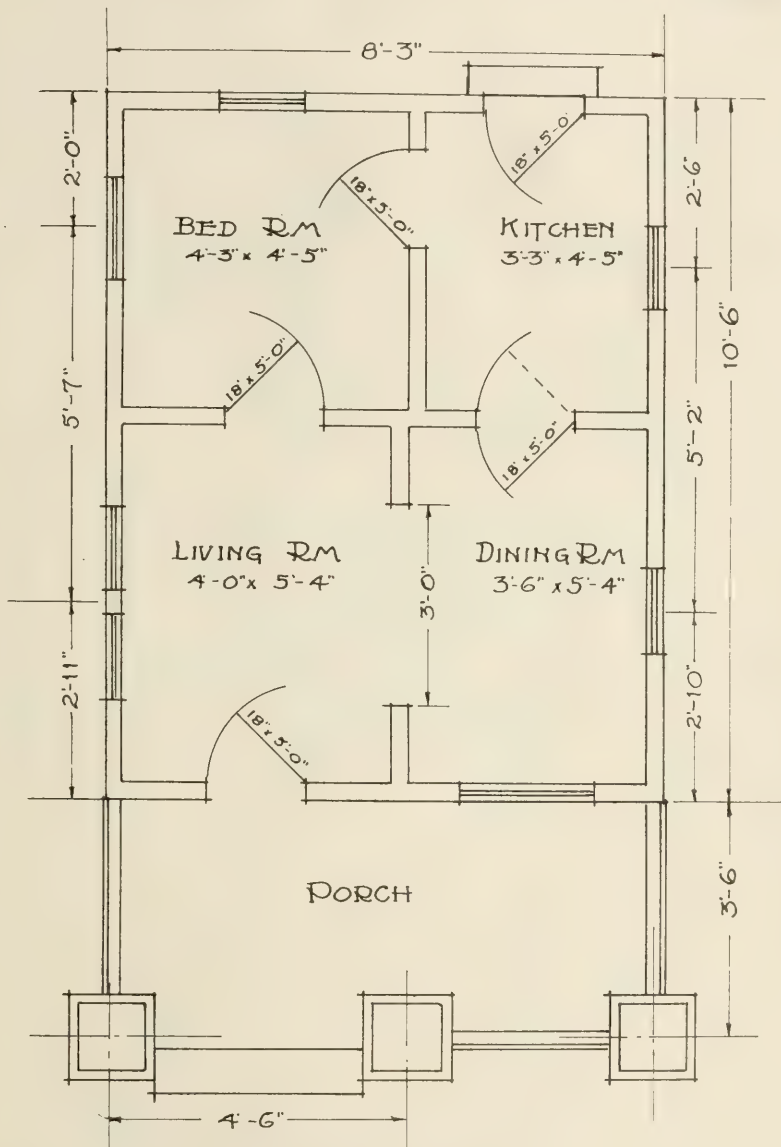
When the beginning of the second semester came, the boys had already heard of the plans for the carpentry course. Nineteen out of the twenty-two boys promoted, applied for the work. While this was a larger number than one would care for in working out a project of this type, all the boys were admitted. One factor which figured largely in accepting so large a number was that one of the boys who had taken part in the drawing of the plans in the architectural drawing class and who had done some advanced work in manual training applied also for this course. It was obvious that this student could be used as foreman, and as such, he could take charge of part of the class when engaged in construction work.

About three weeks of preliminary work was done in the shop in order to review tool processes and to make some needed equipment such as saw-horses, nail boxes, a ladder, a miter-box, etc. By this time settled spring weather had arrived and the class was ready for the real job. The enthusiasm among the boys ran high. The greatest problem for the teacher was to steer it into channels where it would produce results.

The house was constructed on the campus quite close to the door of the woodworking shops. This made it possible to have the demonstrations and discussions inside and thus have better attention from the boys. It also made it possible to carry on work in the shop and on the job simultaneously.

Before the actual construction began the class was divided into two groups. The advanced student previously mentioned acted as general foreman for one group and the teacher took charge of the other. These two groups were again subdivided into gangs of from three to five boys, depending on the kind of work which was to be done. Since it





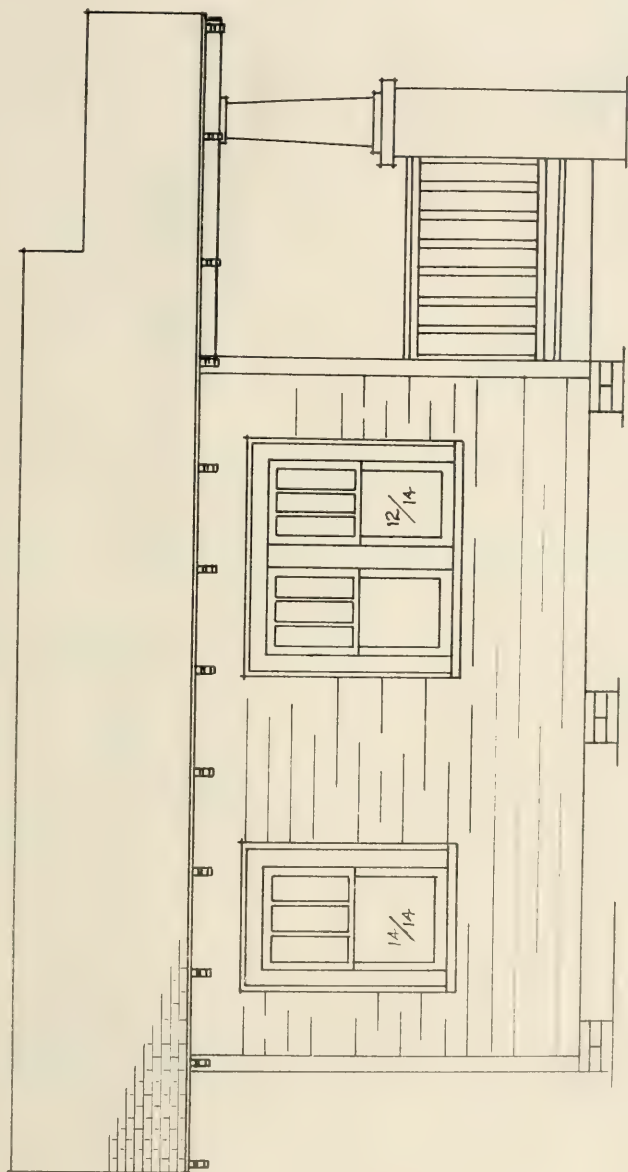
FLOOR PLAN

SCALE:  $\frac{1}{2} = 1'-0"$

MINIATURE BUNGALOW FOR UNITED CHARITIES

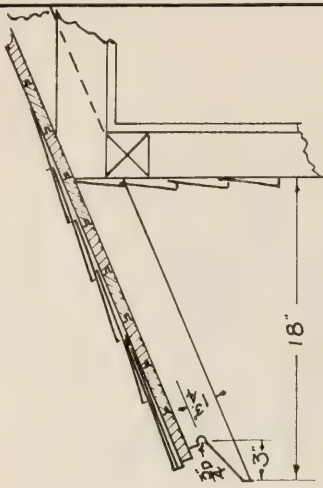
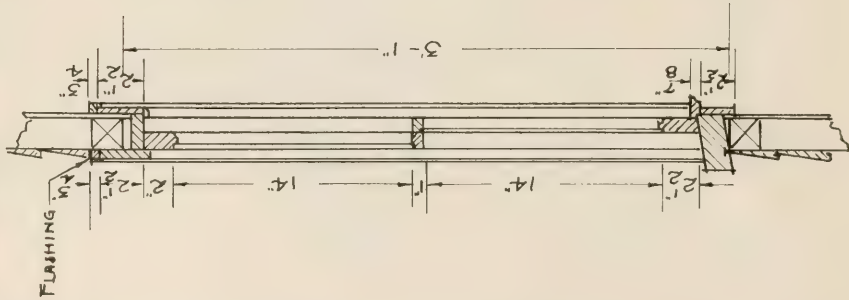
PLANNED AND CONSTRUCTED BY. VOC. HIGH SCHOOL, OKMULGEE, OKLA.



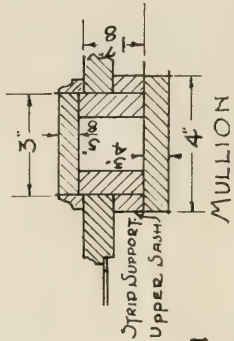


SIDE ELEVATION  
SCALE  $\frac{1}{2}'' = 1'-0''$





DETAIL OF CORNICE



DETAIL OF WINDOW FRAME

SHEET OF DETAILS

## BILL OF MATERIALS FOR MINIATURE BUNGALOW

ARTICLES	PRICE PER M	TOTAL
<b>LUMBER</b>		
18 2x3-14, No. 2.....		
8 2x3-16, No. 2.....		
44 2x2-12, No. 2.....		
8 2x2-16, No. 2.....		
4 2x2-14, No. 2, 388 ft.....	\$70.00	\$27 05
300 ft. 1½x4 W. Pine Siding.....	90.00	27 00
300 " 5x8x4 Ceiling.....	70.00	21.00
3M Asphalt Shingles.....	9.00	27 00
34 ft. Fillet (facing rafters).....	20.00	65
162 " 1x4 B Flooring (Southern Pine).....	125.00	21.25
2 pcs 1x8 -14 BB Southern Pine.....	150.00	3.45
5 " 1x12-12 White Pine.....	200.00	12 00
1 " 1½x12-12 " ".....	200.00	3 00
5 " 1x12-12 " ".....	150.00	9.00
1 " 2x12-12 " ".....	150.00	3.00
20 " 4 ft. x 6 ft. Wall Board.....	50.00	26.40
360 ft. Lattice.....	12.50	4.50
6 pcs. 1x10-16 White Pine.....	200.00	16.00
2 " 1x10-14 " ".....	200.00	4.60
224 ft. Back Band (for casing).....	25.00	5.60
70 ft. Base Shoe.....	20.00	1.40
60 " Window Stop.....	25.00	1.50
70 " Door Stop.....	30.00	2.10
20 " Window Stool.....	60.00	1.20

TOTAL \$218 30

**PAINT AND WOOD FINISHES**

1 gal. Outside Paint (for body color).....	\$ 5.00
1 " " (for trimming).....	5.00
¾ " Turpentine.....	2.25
1 lb. Burnt Umber (for floor stain).....	.65
1 " Chrome Green (stain for wood work).....	.65
1 qt. Interior Varnish.....	1.25
1 " Floor Varnish.....	1.50
¾ gal. Inside Flat Paint (for walls).....	3.75

TOTAL \$20.05

**NAILS AND HARDWARE**

15 lb. 16d Common Nails.....	
5 " 8d " ".....	
5 " 6d " ".....	
4 " 8d Finishing Nails.....	
3 " 4d " ".....	
2 " 3d Blued Nails.....	
2 " 3d fine.....	
4 " Bill Poster's Tacks (for shingles).....	
2 " 1¼ Brads.....	
42 lbs. Nails at 10c.....	4.20
5 Prs. 2½ inch Half Surface Door Butts at 50c.....	2 50
5 French Door Locks at \$2.50.....	12.50

TOTAL \$18 20

was difficult to work all the students on the house at one time, one group was kept busy in the shop while the other group worked outside as much as circumstances would permit. The group in the shop was occupied in preparing materials for the job. Making porch posts, rails and balusters, interior trim, smoothing and staining of interior wood work, were typical jobs for the shop. The groups were changed about in such a way as to give all the boys an equal opportunity for construction work outside. As the work progressed, it was found possible to use a larger number outside; since such jobs as siding and shingling, for instance, could be carried on at the same time.

The painting of the exterior was begun as soon as the siding on one side was completed. It was learned that one boy had had some practical painting experience. This boy was asked to act as foreman for the painting crew. He was kept on the painting job until some other boy proved competent to act as foreman, but his helpers were changed about from time to time.

The house was wired by the class in vocational electricity under the direction of R. R. Ritchie.

In carrying out the work the aim was to make the students acquainted with as many phases of carpentry construction and with as many facts related to this construction as circumstances would permit. Naturally, each of the nineteen students could not get practice at each individual job. Some of the jobs that all could not work at were the laying out of the foundation, laying out and cutting rafters, hanging windows and doors etc.; but each of these jobs was demonstrated and discussed. Written tests were given from time to time in order to find out if the students were getting the side information in connection

with the actual jobs. The students also got practice in buying and checking up lumber, as well as in the correct use of different grades of lumber; also in estimating cost of materials that are used in dwelling houses.

The class was occupied ninety minutes a day for twelve weeks in completing this house as shown in the drawings and photographs which appear in this connection. The house was moved to the business section of the city where it was exhibited during the commencement week. It was then delivered to the united charities. The sale of this miniature bungalow brought into the treasury of this organization the sum of \$320.00.

Some facts about boys were so strongly emphasized during the construction of this project that they may be worthy of mentioning in this connection. One is that boys who enter the freshman class in the high school are not so worthless from the standpoint of mechanical accuracy as some teachers would credit them to be. These boys, from twelve to fifteen years o'd, did all the work on this house. The teacher did none of it. The quality of all the work will compare favorably with that of the average carpenter who has had years of experience. Such jobs as cutting siding to length between window casings and corner boards, hanging doors and fitting in locks were done with very considerable accuracy for the first time.

Another fact that became apparent is that boys like to take the responsibility of a job and carry that job thru. The class period for this work closed at noon. Time and again students would ask for the privilege to stay and complete some piece of work rather than leave it incomplete and go to their lunch. The foreman of a gang would, without exception, show great zeal for the work of





As an illustration, let us take the machine shop work given to the first-year machinists, which we may assume is the making of a grinder. The heading will read "Machine Shop Work of First Year Machinists during First Term or Semester." On the left is placed the complete list of students in this particular class—John Jones, Leonard DeShone, etc. Then let us suppose that we represent the finishing of one of the grinder parts by G-1, another by G-2, another by G-3, a certain exercise leading up to one of the jobs by Ex-1, etc. When all of these job numbers have been put in their proper place, we have outlined the work for the class.

Now while this class is in session the card is hung on the wall or placed on the instructor's desk and when Leonard DeShone completes Job B-1 and presents it to the instructor for inspection he is given a grade on the class card in the proper place if the work has been found satisfactory. He is given the next job, B-2, and commences work on it. The same is done when any other member of the class completes a job satisfactorily. If, after a short time, it is found that John Jones is progressing more rapidly than other members of the class, he may be given special jobs involving the work

he has been taught and receive credit for them under Sp-1, Sp-2, Sp-3, etc. to the right of the required job numbers.

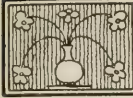
By the use of this card we have outlined the course to be followed, provided a graphical representation of the accomplishments of the class as a whole as well as the accomplishments of its individual members, provided an easy method of determining grades and created a desire in the individual member to excel his fellow workers. Also, if these cards are collected at the end of each term they may be used the following year as a basis for that year's work. New jobs may be added or substituted and the work is gradually made better and better.

With one supervisor in charge of all of the shop departments, it is possible by the use of these cards to call for such jobs in each department that will be working together on several finished products, each one doing its part in the running of the school on an industrial production basis.

It is well to have a job list card for the description of the work called for under any particular number for the convenience of the instructor. The job number may be made to cover almost any definite amount of work.



THE STRIKE PISTOL—A DANGEROUS WEAPON  
(From London Opinion)



## EDITORIAL REVIEW FOR THE MONTH



### THE MID-WESTERN MEETING IN MINNEAPOLIS

THE September bulletin of the Vocational Education Association of the Middle West announces that the next convention of that association will be held in Minneapolis, February 10th, 11th and 12th. This is the first time the Association has held a meeting outside of Chicago, and on that account is looked upon by some members as a doubtful experiment. It is urged by these that Chicago is the logical meeting place because of its central location, its excellent facilities for taking care of a convention and the enthusiasm and tireless energy of the Chicago men who have labored to make the Association the success that it has become. On the other hand, there is a stronger feeling that, if the Association is going to live up to its name and really be a Mid-Western institution, it should not always meet in Chicago—perhaps not oftener than every alternate year. Concerning the decision the September Bulletin says,

In voting to meet in Minneapolis several points were considered. First, the generous invitation from the city of Minneapolis and the State of Minnesota was difficult to refuse. This invitation was hearty and included letters from the Governor of Minnesota, the President of the University of Minnesota, and many others prominent in the educational and civic activities of the State. Second, the appeal included in the invitations challenged the Association. It was suggested that such a meeting in Minneapolis was particularly needed now, not only by the state of Minnesota, but by the entire Northwest in order that vocational education might be developed as the conditions warranted. The close proximity to the Canadian Northwest, it was indicated, furnished opportunity for the same kind of stimulus across the border. Third, it was also pointed out that the Association and its members have much to learn from the splendid work which has already been done in Minnesota with its splendid schools and progressive spirit. This spirit is reflected also in the generously

endowed private schools as well as the public schools.

The Board of Directors and the Executive Committee believes the membership of the Association will heartily concur in the decision to hold the next annual meeting in Minneapolis and will welcome the opportunity to become acquainted thru intimate study with the excellent educational progress of the great Northwest. It is recognized, however, that to make this meeting a success a consistent campaign must be begun and carried out, emphasizing the value of the coming convention to everyone interested in vocational education. There are many in these Middle Western states who have not as yet discovered the value of the Association in helping solve the problems of vocational education in the Middle West. Every member must consider himself a committee of one to inform such persons of the Association and its ideals and size.

There is every reason why the vocational education men of the Middle West should rally to the enthusiastic support of the president, Professor Edwin A. Lee, and the other officers, in their plans to demonstrate that the Association does in fact belong to the entire Middle West. The Chicago people have already shown that they are the very first to do this. Let all the others follow, and thus demonstrate the strength and solidarity of the Association.

An analysis of the present membership of the Association gives the following results:

Illinois.....	243	Michigan.....	35
Indiana.....	53	Kansas.....	13
Wisconsin.....	53	Nebraska.....	11
Minnesota.....	50	Kentucky.....	9
Ohio.....	49	South Dakota.....	8
Missouri.....	40	North Dakota.....	2
Iowa.....	39	Outside the Middle West territory....	14

This, surely, is a good showing. Let the northern states of the group gain as many members as are lost in the southern states on account of the meeting being in Minneapolis, and the result will be satisfactory.



## NEED OF A PROFESSIONAL ATTITUDE

THE farewell address of Superintendent Spaulding as he left Cleveland to enter upon his work as head of the new department of education at Yale University was on such a high plane of thought and at the same time so applicable to teachers of manual arts and vocational subjects that we give two excerpts which appeared in *School Topics*.

After giving statistics showing that "only a small minority of the total membership of the teaching profession in America is fairly well educated" he said,

The public does not have for the teaching profession the same respect it has for other professions. Its feeling is tinged with sympathy and condescension. The attitude with which one enters the profession and continues in it has far-reaching significance. Those who want to remain in teaching and make it a life career can do much to elevate the profession. Instead of congratulating those teachers who are ambitious for promotion and who win promotion without qualifying themselves to justify or realize their ambitions, other teachers should insist that all promotions be deserved. At present there is lacking a vigorous professional attitude to check unjustified ambition.

From the ranks of the transient teachers—those who think they will teach only a few years but who continue in the service, year after year with only routine advancement, large numbers come to be disappointed and aggrieved.

"Isn't my experience worth anything?" such teachers often ask in seeking advancement. Their experience is likely to be worth less than nothing; it is likely to be a hindrance to their doing really good work for mere experience often causes one to become set in routine and habit.

Later in his address he gave the following advice to those who really like teaching and want to make it a life work.

After entering the profession, spend at least 20 to 25 years in your own education and preparation for professional advancement.

Expect advancement only on the basis of your professional merit.

Expect others rather than yourself to judge your merit. The judgment of others is more just than your own.

Don't be afraid to try your fortunes in more

than one locality. If you are in doubt of the justice of the decision of one set of school officials, move to another locality. The sum-total of the judgments must inevitably be fair.

Choose for your associates in the profession those who are professionally-minded.

PROFESSOR GRIFFITH  
GOES TO WISCONSIN

PROFESSOR Ira S. Griffith of the University of Illinois has been selected to succeed Professor Fred D. Crawshaw as head of the Manual Arts Department of the University of Wisconsin. As stated in our July number Mr. Crawshaw has left the teaching profession to enter the Western agency of the Aetna Life Insurance Co. Under these circumstances the University is fortunate in being able to induce Mr. Griffith to leave Illinois. We believe it is safe to say that no man in the United States is so well qualified for that particular position as is Mr. Griffith.

## JUNIOR ACHIEVEMENT BUREAU

THE announcement of the Junior Achievement Bureau of the Eastern states League sounds very refreshing in these days when we hear too much about "less work," "more pay," and "more fun." The "objectives" of this organization are:—

To create a keen appreciation by boys and girls for service and production.

To inspire a zest for work and enthusiasm for thrift.

To put "sportsmanship" and "game" into work and production.

To give boys and girls a chance to capitalize in their home community the experience, wisdom and achievement of commercial, industrial and trade leaders.

To inspire and assist 10,000,000 boys and girls of the ten Eastern States to attain "independence at fifty."

With these aims in view the Bureau is organizing achievement clubs of boys and girls in industry, commerce, trades, agriculture and home-making in indus-

trial centers and rural districts. The program includes contests of various kinds, public demonstrations and play festivals.

This work is under the leadership of O. H. Benson who was the organizing genius of the agricultural and home-making club work of the United States Department of Agriculture. Now his headquarters is in Springfield, Mass.

The Bureau is cooperating with the Rotary Clubs, the public schools, the Boy Scouts and many other organizations.

#### ART AND COMMUNITY BETTERMENT IN ILLINOIS

A COMMITTEE has been formed in the State of Illinois, known as the Art Extension Committee of the Better Community Conference. The word "art," in this case, is given a broad enough interpretation to include whatever makes for beauty in the material surroundings of human kind and so affects the thoughts and emotional life of the people. The committee is the latest manifestation of the Better Community Movement that had its beginning five years ago with the appointment of Professor R. E. Hieronymus as community adviser at the University of Illinois. The chairman of this committee is Lorado Taft, the sculptor, and the other members are artists, teachers, club workers, professional people and other men and women in the larger centers of population who have been actively identified with community improvement and are willing to cooperate in the state-wide movement. At the present time there are twenty-six members of the Committee, all carefully selected with reference to ability and their interest in the work contemplated.

The first meeting of the Committee was held in Chicago at the Midway Studios, the University of Chicago and

the Chicago Art Institute on the 22nd and 23rd and 24th of July. At that time the Committee was organized into a working body, and a general policy adopted. It will not form a new society but will seek to supply an evident present need thru cooperation with boards of education, associations of commerce, women's clubs, art organizations, farm bureaus, and any other organizations that are seeking to make Illinois more beautiful and its people more appreciative of art, whether that art be represented in painting, sculpture, or dramatic interpretation, city planning, or in landscape architecture, home decorative or photography. The Committee will not be satisfied with stimulating art development in the cities alone; it aims to offer also such kinds of assistance as is known to be wanted in the small towns and villages and in the open country.

With such a policy adopted, the Committee outlined its activities for the near future. It proposes to encourage and organize picture competitions, some open to school children only, and others to adults as well. The aim of these will be to encourage a large number of people to hunt for beauty in their own environment and make a record of it in photograph or sketch. When people hunt for beauty in the landscape, the trees, the sky, the stream or the flowers, they are likely to find it.

The Committee will encourage the formation of photography clubs and print clubs to carry forward the cooperative study of the beautiful in nature and in art. One of the major activities of the Committee will be the preparation and circulation of exhibits. Efforts will be made to send out during the coming winter (1) a choice collection of photographs of Illinois sculpture, (2) exhibit of schemes for planting public and private grounds (3) a small collection of fine

paintings with instructive explanatory notes, (4) a collection of city plans, (5) photographs and plans of community high schools, (6) an exhibit of community houses, (7) one or more exhibits of examples of industrial art, and (8) a photographic exhibit of dramatic art. These will all be so small that the cost of transportation will be low. The Committee will also render assistance in selecting and routing larger exhibits if such help is needed.

For communities and small groups of people that cannot afford to pay for lecturers on art, the Committee is planning to provide manuscript lectures accompanied in some cases with lantern slides, in others with photographs or prints. If solicited, the Committee will help communities to secure expert advice in reference to war memorials, and the improving of public grounds. In fact, the Committee will seek to utilize every reasonable means available to make the appreciation and enjoyment of art a more practical, every-day experience in the lives of the people of the state of Illinois.

This committee comes into being at just the right time to supplement and help carry forward work that has already been well started in many schools by the teachers of drawing, manual training and home-making.

#### MORE SHOP EXPERIENCE FOR ENGINEERING STUDENTS

**A** BRIEF summary of the proceedings of the meeting of the Society for the Promotion of Engineering Education is

given in *School Life* for July 15th. Cooperation between industry and education is stated to have been the keynote of this convention held at the University of Michigan, June 29th to July 2nd.

Roy D. Chapin, president of the Hudson Motor Car Co., discussed cooperation from the standpoint of the industrial executive. As the result of many definite inquiries Mr. Chapin stated that the average college and engineering graduate was too poorly equipped to become industrially productive, except at considerable financial loss to employers. He urged that engineering students be required to give more time to shopwork during their college course of study, and he especially encouraged the further extension of cooperative plans now conducted by engineering schools, such as the University of Cincinnati, the University of Pittsburgh, and the department of electrical engineering of the Massachusetts Institute of Technology. It was suggested that professors of engineering should be required to spend at least two months out of every two years in the shop of industrial establishments, in order that they could give first-hand information regarding prevailing methods.

#### A MILLION DOLLAR BEQUEST

**I**N JULY we called attention to the Eli H. Larkin bequest to the David Ranken Jr. School of Mechanical Trades in St. Louis. At that time it was supposed that the amount available on account of this gift would be \$500,000. A recent letter from Superintendent Gustafson states that it is now expected that the amount will reach \$1,000,000. If, now, the trustees and faculty can content themselves with remaining a school for "noncoms," as Mr. Gustafson has well put it, and not try to become a university or engineering college, as most schools with big endowments have done, the Ranken School is sure to render a great service where it is most needed.

*Whatever teachers wish their pupils to do, let them point out the way by themselves doing it.*

—Comenius, in "The Great Didactic."



## A POINT OF VIEW

ANOTHER state is added to the list of those having programs for compulsory continuation schools. This time it is New York which has a golden opportunity to recognize adequately the need and right of working children for educational opportunities. Dr. Finley, the State Commissioner of Education, calls the law the "Children's Chart" because of the guarantee which it makes on the part of the State to all children who live in the Commonwealth. Indeed it is a Common Wealth or should be made such.

There is potential wealth in that part of the law relating to the course of study which "shall include among other subjects instruction in American history, the rights and obligations of citizenship, industrial history, economics, the essential features of its laws relating to the industries taught, and shall include such other subjects as will enlarge the vocational intelligence of such minors."

As the boys would say "That's some program." It has a threefold purpose: to prepare youth for participation as citizens in the political life of the State, to foster right ideals in a democracy of industry, and to guide toward and train youth for useful occupations. The first purpose will not be difficult to realize. The history and theory of our government and its social organization is a matter of record and can be taken from the text. The third purpose is more difficult, especially that of those dealing with vocational guidance.

It is in developing the second purpose that the carburetor will sputter, the engine will knock, and the car will stall (to use illustrations taken out of the experience of motorists). What mixture? More gas or more air? or better ignition? In other, and more pedagogical language, what are the rights and obligations of

citizenship? What interpretations shall be put on laws relating to industries? How is vocational intelligence aroused?

It is far from my purpose to discount the value of this second purpose. In part, I believe that it was unconsciously the basic theory in mind in framing the law. The emphasis is not on shop mathematics, business English, geography, grammar or spelling (altho these may be the subjects hinted at in the wording "such other subjects"). Rather, the emphasis is on the social and economic problems incident to a vocational life. Our education for citizenship in a home, a shop, an office or a farm has not been as definitely organized as has our education for citizenship based upon textbooks which show pictures of city halls and call for memorizing the list of state officials.

This country is not suffering any lack of knowledge of the method of working a ballot or where to locate the city hall or what the President is paid or definitions of political sub-divisions of the state or the factory laws or safety devices or what not. There is a need for knowing what to mark on the ballot, who to send to the city hall, how to spend public money, how to get the factory laws enforced and safety devices adopted and used, what is a fair division of profits, and so on.

Lewis Wilson, state director, has outlined a very clear-cut program for the organization and administration of the continuation and part-time schools of the state. He has conducted this summer at Oswego Normal School a very effective course in training supervisors and teachers for the work in hand. He is going at the problem in a sane and practical manner.

I will prophecy that his chief difficulty will be in finding good teachers who can

interpret what is needed in the way of social and economic teaching and who can sanely develop vocational guidance. The textbooks are limited and teachers who have the requisite background are even more limited. The "regular" teacher will think that the salvation of vocational youths lies in knowing Jones' Arithmetic, Smith's Grammar, Brown's Geography and Reed's "Bones of the Body." She (or it may be a "he") will start in where the youth left off in the grades. To make dead sure, she will have a little "review." She will be irritated by the fact that children are always enrolled and always leaving. It will interfere with her "course of study." She will discover that her class has pupils of one age in years, perhaps, and fifteen ages in mentality and school grading. She may want to sort them by "grades" while her superior tells her to arrange them by "occupations." She will insist upon "a printed course of study being furnished her" and "must have a textbook." Poor unhappy mortal!

She, or he, (it is unfair to lay all this at the door of the woman teacher) "must advise and direct the child in as far as may be possible to take up employments which offer the largest future possibilities in the way of personal advancement," (I am quoting from the bulletin

issued by Director Wilson) "Much of the instruction must be individual in character, and that even in subjects where class instruction is given; each lesson must be a unit in itself." "The teacher will find himself confronted each day with the problem of fitting new pupils into the scheme of instruction." "Individual instruction depends for its effectiveness on definite information in regard to the training and occupation of each pupil." "A large amount of excellent teaching may be done in science, hygiene, citizenship, economics and history without any course-of-study background." "The work needs to be unified in thought and intensely interesting to the pupils."

It is time to say Selah! or Amen! These statements are axioms or prayers. In fact they are both. You do not wonder that emphasis is being placed upon training teachers for this work. It means a teacher with a background of work-a-day thought and action. It means a teacher who has felt economics as well as studied it. It means a teacher whose heart beats stronger when he sees a great hedge or a modern factory or a department store or a harvesting machine. It means a teacher who sees in youth the men and women of a tomorrow of an industrial democracy. —ARTHUR D. DEAN

*So long as we send into the district schools young teachers who have been taught merely in the common text-book branches, and whose training has been exclusively pedagogical, the practice of educating the boys and girls away from the farm will go on. The country school is, in its best sense, an industrial school; and only those teachers can do best work therein who have had the personal experience in industrial training and the changed point of view which only the agricultural college can give.*

—W. A. McKEEVER.

## WASHINGTON CORRESPONDENCE

### THE NEW EDUCATION IN THE NAVY

**J**UNE 1, 1920, saw the quiet beginning of a most significant educational experiment. On that date a new educational plan was put into operation by the Navy Department on the *Rochester*.

The *Rochester*, it is worthy of note, is the flagship of Admiral Plunkett, in charge of a destroyer flotilla, and is at present stationed at Newport, Rh. Is., Captain L. M. Overstreet in command. The ship is the old *New York*, at one time the flagship of Admiral Sampson. With Captain "Bob" Evans in command, she was sent to Germany to participate in the celebration of the opening of the Kiel Canal. At that time the German Emperor with several members of his staff went all over her with great interest. The *Rochester* was also the "mother ship" for the N C - 4 and her companions at the time of the memorable flight across the Atlantic. To her already numerous claims to distinction she now adds that of sponsoring the inauguration of a unique plan of education for our boys at sea.

#### PERSONNEL MORE IMPORTANT THAN MATERIEL

**T**O begin with, we are told that the United States Navy has been thoroughly converted to the belief that personnel is more important than materiel. Scrupulous care for the highest possible attainment in ships, machinery, and fighting equipment will not be abated in the slightest degree, but for some time now the Navy has been committed to the policy of increased attention to the development of the men.

One of the important results of the experience of the Navy Department Commission on Training Camp Activities during the war was the decision to organize

a permanent agency for the carrying on of certain activities the value of which was demonstrated so clearly. For this purpose there was created a division of the Bureau of Navigation, the sixth Division, charged with responsibility for the following: Education, recreation, athletic sports, motion pictures, music, dramatics, social hygiene.

As at present organized, Captain D. F. Sellers is chief of the Division, and Chaplain P. P. Riddle is directly in charge of the sub-division of Library, Religion, Education and Recreation, and Guide Books.

The civilian educational adviser, in general charge of the educational features of the division, is L. R. Alderman, formerly state superintendent of public instruction in Oregon and later superintendent of public schools of Portland, Oregon. Mr. Alderman's appointment dates from August 9, 1919, so that he has been at work a little over a year. Associated with him is Professor H. R. Harper, formerly of Boston University.

#### TRAVEL AND EDUCATION

**I**N ITS recruiting literature the Navy has laid much emphasis on the advantages of travel and study afforded by enlistment. "Neither travel without study nor study without travel spells education. To study for a long period and then travel for a like period is not the ideal; but to study while traveling and to travel while studying is the ideal." A more definite attempt than ever before is now to be made to stimulate the men to take advantage of available opportunities.

For example, the Sixth Division is preparing a series of Illustrated booklets dealing with the principal ports of the world. More than a hundred of these

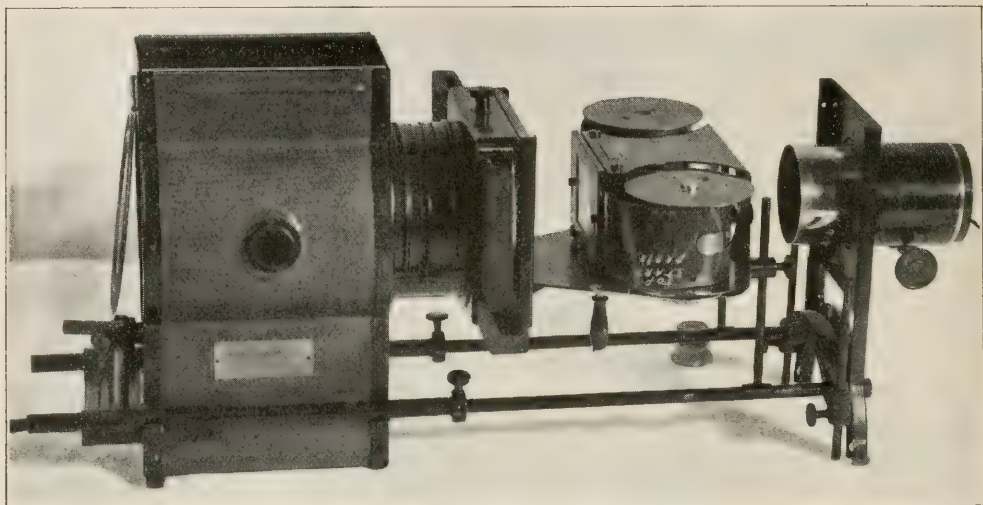


are projected. I have before me a 40-page booklet on Gibraltar, which is intended to be placed in the hands of each man on board ship just before arriving at that port. It contains maps, and photographs showing the principal points of interest, with several pages of text

#### ESSENTIAL FEATURES OF THE NAVY EDUCATION SYSTEM

THE strictly educational parts of the Navy plan is based on the following features:

1. The school work is optional.



BY MEANS OF A SIMPLE ATTACHMENT, SIMILAR TO THE MECHANISM USED IN A CAMERA, THE SECTIONS OF FILM ARE BROUGHT INTO POSITION FOR PROJECTION, ONE AFTER THE OTHER. THIS PLAN DOES AWAY WITH THE BULK AND WEIGHT OF GLASS LANTERN SLIDES, AVOIDS THE DANGER OF BREAKAGE, AND IS MUCH EASIER TO MANIPULATE.

containing the essential historical and geographical setting.

In addition, each ship will carry a set of slides, many of them in colors, accompanied by a typewritten travelog lecture, which will be read aloud while the pictures are shown on the screen. One of the things which has made this part of the plan possible was the development of a scheme for using a strip of film in place of the cumbersome and fragile glass slides. Thru the courtesy of Mr. Alderman I secured the two photographs shown on page 78 and 79. The Navy was the first to use these films and the stereopticon attachment.

2. An education officer is detailed to the ship to encourage and aid the men in their school work.

3. The commanding officer sets aside specific time for study.

4. The chief methods of instruction include the use of study outlines based on the best experience of correspondence schools; the use of motion pictures lantern slides, charts, etc.; and the counsel of an education officer.

5. The education officer observes a definite schedule of office hours in order to be accessible to the men for individual interviews.

The plan utilizes the advantages of the better type of correspondence instruction, with its emphasis on individual effort and its provision for individual advancement, and adds the personal attention and guidance of experts in various

lines. The equipment of a fighting ship includes an almost unbelievable collection of machinery and laboratory facilities, and its complement of officers includes a group of experts trained and experienced in many technical lines.

Most of these experts, it is true, know little about the science and art of teaching, but they do know their special subjects. For the instruction in engineering for example, the men have the personal assistance of the chief engineer of the *Rochester*, a graduate of Columbia University, and an engineer of wide experience on the largest ships of the Navy. For instructor in navigation there is the chief navigating officer, who knows navigation from *a* to *z*.

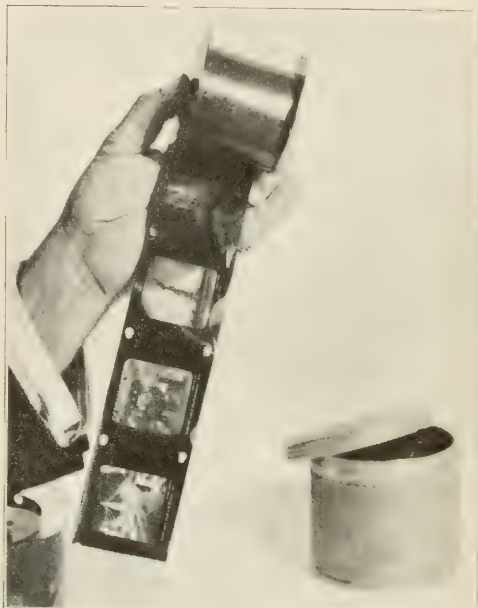
The educational classes on the *Rochester* are under the immediate direction of Ensign J. E. Welcher, who has had special preparation and experience for this work. His task will be to coordinate the work of the various experts and to supply as much as possible of the school spirit.

#### COURSES OFFERED

THE attempt will be made to supply courses of instruction in sufficient variety to meet the demands of all the men on board, tho naturally it will take some time to build up an organization capable of doing this. Mr. Alderman showed me a summary of the reports received from the *Rochester* up to July 24, indicating that 481 out of somewhat less than 1,000 men had already enrolled in courses. Of these, 89 enrolled in complete curricula of varying lengths, as follows: Yoemanry, 15; Gas engineering, 32; Electrical engineering, 28; Navigation, 14. The remainder are enrolled in a considerable variety of subjects, ranging from technical work in steam and

electrical engineering to instructions in languages, mathematics, the natural sciences, mechanical drafting, international law, economics, etc.

After the work was started on the *Rochester*, plans were made to open a similar school on the *Dixie*, Captain Conn in command, which is the repair



TEACHERS WHO MAKE USE OF THE STEREOPTICON WILL BE INTERESTED IN THE SPOOL OF FILM AS A SUBSTITUTE FOR THE BOX OF LANTERN SLIDES. THIS DEVICE HAS BEEN ADOPTED FOR EXTENSIVE USE ON BOARD SHIP IN THE U. S. NAVY.

ship for the destroyer flotilla. Its crew is made up almost exclusively of skilled mechanics and men trained in various lines of technical work. The education officer in charge is Chaplain F. L. McFadden. The work is not yet well under way, altho 137 men have already enrolled in a variety of courses.

I hope at some future time to be able to give further details of this interesting experiment.

## IN FOREIGN COUNTRIES

### EMPLOYERS AND EDUCATION

A RECENT number of *The Times Educational Supplement* contains a discussion under the title "Employers and Education" that seems to reflect so clearly present currents of thought with reference to industrial education in England that we give the following excerpts from the article:

On May 28, 1919, there came into being a society that could not satisfy itself with a shorter title than The Association for the Advancement of Education in Industry and Commerce. Even this garrulous description does not remove ambiguity, for suspicious folk are inquiring whether the society exists to promote industrial and commercial education, or to further the general educational interests of those who are engaged in industry and commerce. The suspicion is supplied by Labor, as is not surprising, since the Association is made up of employers and their educational assistants and advisers. A glance at the published aims of the Association shows that, while all kinds of education are taken into account, the bias is on those forms that are usually connected in men's minds with general culture. In the words of the circular, the aims of the Association are (a) The encouragement of definite educational work in—we take *in* to mean *in connexion* with—industrial and commercial undertakings; (b) The general advancement of education by means of (1) the printing and circulation of papers; (2) investigation and research; (3) consultation with public education authorities; (4) cooperation with other educational bodies; (5) the holding of periodical conferences. Nothing could be more straightforward than this statement of broad aims, and even suspicious Labor will find it hard to discover traces of the cloven foot of Capitalism.

Four of the proposed conferences have already been held, and another is going on this week at the University of Liverpool and at Port Sunlight. The nature of the subjects treated at these meetings is also calculated to allay suspicion. So far from showing a tendency to treat the workpeople as mere tools that want sharpening so as to increase their efficiency, the addresses have all had a bias in the direction of broad general education for the worker. Indeed, at the conference now going on, Mr. P. A. Best, of Selfridge's, rather turns the tables on the Labor crit-

ics by choosing as his subject, "The Educational Value of a Business to its Personnel and the Community." The Association, in fact, is doing what it can to prove that it really has at heart the interests of general education.

\* \* \* \* \*

But suspicion dies hard, so it is difficult to persuade the working man that all this organization is got up with the disinterested motive of improving his education.

The mere membership costs money. The prospects tells us that "each associated employer shall pay an annual subscription of five guineas," and "each individual member (for the purposes of the Association an employer does not appear to be recognized as an individual) shall pay an annual subscription of three guineas." This is naturally only the beginning of expense, for the educational outlay of several of the firms represented in the Association must be very heavy. We have only to glance through their school buildings to realize that. Now what the working man wants to know is what the masters expect to get out of all this outlay. It is an ill business this investigating of motives, but the sleepless suspicion of Labor makes it imperative that the matter should be faced, and faced with a certain brutal directness, if a satisfactory result is to be produced.

\* \* \* \* \*

They have always resented, and with justice, the hideous synecdoche that labels them as "hands." But while the world as a whole is with the workman in his rejection of the attitude that treats him as a mere tool, he must not forget that, after all, he is a tool. No doubt he ought to be treated as an end in himself, but he is at the same time a means. We all are. We must not overlook the importance of the word merely. We may be in the highest and truest sense ends, and yet in certain connexions we may be means. However much soul and individuality a working man may possess, he has also hands, and in the ultimate resort he is in one connexion a "hand." Unfortunately the word has acquired a bad connotation, and it is probably bad taste to use it in industry, but we must not burke the fact that it represents a truth. It happens that employers have not hit upon the use of the word "head" to represent those of their employees who work mainly with their brains. But there would be nothing really bad in an employer speaking figuratively about



his "hands" in the workshop and his "heads" in the laboratory. To be sure, the psychologist comes along and pours oil on the troubled waters by assuring us that we cannot separate hand work from head work, and we are only too willing to drop the callous figure of the "hand." But if spirit and matter are so inseparable in our nature that philosophers have recently hit upon the compound word soul-body to emphasize this solidarity, there is all the more need to admit that we cannot educate one part of ourselves without educating the whole.

The employers are doubtless right in thinking that when they educate the spiritual and personal side of their workman they are also educating the side that makes him a valuable means towards their ends. When we realize that we are all—employers and employed alike—both means and ends, there can be no objection to our being so trained that while we become more valuable to ourselves as ends we are at the same time improved as means.

So long as the employer recognizes the personality of his employees and does his best to develop that by means of education he is entitled here, as in the matter of publicity, to any by-product that may appear. It has to be remembered that increased mechanical skill does not injure the workman—from some working-class complaints one would almost think it did—so he suffers no disadvantages if his general education incidentally increases his efficiency in mechanical operations. On the other hand, general education both enables the workman to deal more intelligently with his mechanical work and to invent ways of reducing the amount of the mechanical element it involves. Workmen should consider with care what an advance this new Association implies. The old idea among callous employers was that education was not only unnecessary for workmen, but was positively injurious to their efficiency. What was wanted was a man who could do the mechanical work and not think about it. "We don't want our girls to think; we want them to do their work" was a complaint formerly common among the more brutal type of foremen, and even to-day it is not unfrequently heard. They wanted the workmen and workwomen to be mere means. The new spirit recognizes even from the lowest standpoint the need to recognize the "end" in every human being.

\* \* \* \* \*

But there is the further possibility—just the bare possibility—that underneath the enthusiasm

for education shadowed forth in the prospectus of this new Association there may be a basis of brotherhood and general good feeling. Workpeople are only too prone to question the existence of any such generous feeling among employers, and to condemn it as impertinence in the few cases where they suspect its existence. They are fiercely jealous of their independence and resent nothing quite so much as any trace of philanthropy and patronage. Yet it is probable that there is more than a tincture of the milk of human kindness involved in this new attitude of the employers towards education. In other directions it is true that what looked like brotherly kindness on the part of employers has resulted in sinister developments along economic lines. One hears complaints, that appear to have a good deal of justification, about certain pension and housing schemes that have led, in the kindest possible way, to something approaching a sort of comfortable slavery. It is hinted that for certain postponed benefits workers have bartered away their freedom of movement, and have fallen into a state comparable with a mild form of feudalism; they are bound to the land. But nothing of this kind can happen on the educational side. Education may enslave a nation; it has done so more than once. But such a result can be brought about only by the complicity of the teachers, and there is no trace that the employers are making any attempt to suborn the profession. Their teachers no doubt are on the side of the employers to the extent of being eligible for membership of the new Association. But there is no suggestion that these teachers are willing to pay three guineas a year in order to constitute themselves a class apart from their fellows. They will be amenable to the same influences as their fellows outside the Association. Further, it does not appear that the Association has any idea of confining its attention to "works schools," that *bête noire* of the W. E. A. (Workers Educational Association). Of the dangers of this class of school the workers are more than fully aware, and any attempt to develop them along the lines of pure vocationalism will be at once hotly opposed. Indeed, the real danger with regard to such schools is that they will not be allowed, in the first instance, to do as effective work as they might in the way of combining cultural with vocational training. The employers must walk warily for a time till they have convinced the worker that they really have his interest at heart—whatever may be the ultimate motives that prompt them to this atti-

tude. When they have convinced the working man of their sincerity, he will no doubt be prepared to let them make whatever experiments they may think necessary to get the best results from the works schools. The great problem at present is the correlation between the vocational and the cultural in these and other schools. In any case the new Association is taking a very wise course in encouraging the greatest possible publicity with regard to its work. If it wanted to use its power in an illegitimate way its policy would obviously be to carry on with as little display as possible.

### SUCCESS OF VOCATIONAL SCHOOLS IN CHINA

THE following account of the Chung Hua Vocational School in Shanghai appeared in a recent issue of the *New York Sun*.

As an institution to turn the mind of young China toward industrialism the Chung Hua Vocational School was opened in the spring of 1918 in Shanghai in a district where trade and iron and woodwork fit into the usual occupations. The work started out with ironwork and woodwork as a basis, supplemented subsequently by courses in enamelling and button manufacture. The curriculum was made up of these four courses, the enrollment open to graduates from higher primary schools, in which they are to be educated for three years. The school maintains workshops where the pupils put in half a day in practical labor, spending the other half in the classrooms. Apprentices are also admitted and are trained as artisans. Little less than a year ago a training class for teachers in vocational education was offered to middle school graduates for a one year period, which they devoted to shopwork. This was to fill the need felt in the vocational schools which were springing up in different centers patterned after the Chung Hua school, but which lacked teachers.

Arrangements have now been made with *La Societe Franco-Chinoise d'Education* to open a preparatory course in the school for one year preliminary to sending middle school graduates to France for further study.

The 140 boys taking the general course spend

half a day studying Chinese, science and mathematics and the other half doing industrial work. They pay for their food, but the tuition is free, and they are prepared to be skilled mechanics and foreman. Accommodation is provided for forty boys who pay nothing, work all day and study in the evening. Fifty normal high school graduates work all day preparing themselves as teachers of industrial training. Fifty more of the same class are studying French in the day time, working in the shops at night, preparing to go to France for advanced training.

These two latter groups pay for board only. That the Chung Hua Vocational School is an unusual educational experiment for China may be seen from the fact that student self-government modelled after the George Junior Republic, with its executive, legislative and judicial departments, is in force. It has worked well under faculty guidance, having complete control over the student body. Furthermore, a students' co-operative store and a savings bank are carried on. Self help is the rule, all janitor work and serving of meals being done by the students, as there are only two servants employed in the whole of the school.

The effectiveness of the Chung Hua Vocational School may be seen from the fact that many schools of the same type have been planned and are springing into existence in Soochow, Wuhu, Nantung, Swatow and even in the far western province of Szechuan.

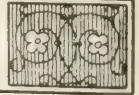
### ATTENDANCE INCREASING IN GERMAN POLYTECHNIC SCHOOLS

AN article in the *New York Times* points out that a recent report of attendance in higher institutions of learning in Germany indicates that, while the attendance at the universities shows a slight decrease, that in technical schools shows a material gain. This is taken as an indication of a tendency toward practical studies. The total number in the higher polytechnic schools, such as Charlottenburg, Munich and Stuttgart, is 18,000, while the attendance in the universities is 82,000.

*We must remember that the handicrafts are the embodiment of the mind, and should be the embodiment of the very highest kind of creative imagination.*—VISCOUNT HALDANE, at Conference on "New Ideals in Education."



## PROJECTS, PROBLEMS AND NOTES



### PROJECTS, PROBLEMS AND NOTES

**J**UST a few practical suggestions as the new year opens:—

(a) Have your scheme of work well planned before you begin to teach your first class. Work out the plan in detail, but don't let it become fixed. Be sure to provide in it enough flexibility to meet the capacities and interests of all the individual students.



TOOLROOM, PARKE AVE. SCHOOL,  
WEST SPRINGFIELD, MASS.

(b) At the opening of the term do not ask the boys what they want to make. Take it for granted that each student is going to be glad to make what every other student is making and just what you want him to make during the first few weeks, at least, while you are getting acquainted with the individual members of the class.

(c) See that everything is in order in the shop—that there is a place for every-

thing and that this place is known to the students. (The picture of the tool-room at the Parke Ave. School, West Springfield, Mass., suggests how one man has arranged some of his shop tools). Then insist that each member of the class cooperate in keeping things where they belong when not in use. Live up to this literally, and one large block of your troubles vanish, and the boys are sure of getting some valuable training.

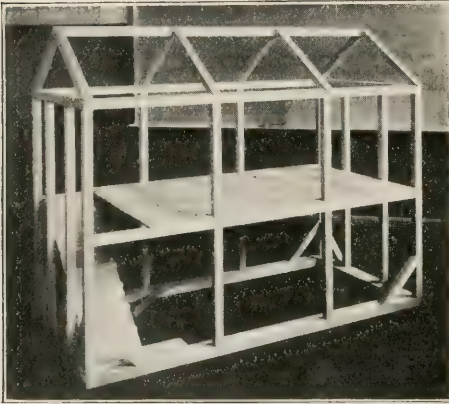
(d) Practice reasonable, intelligent economy yourself and require the students to enter into the practice with you. As a step in this direction let every student make out his own bill of materials for each job, even tho it be a small one. Provide him with a table of costs. Whenever a student gets out his own piece of stock, see that he consults the scrap pile first, and then, if he cuts into a full board, that he cuts economically.

(e) Remember that you are teaching boys to think as well as to use their muscles, and that time spent in real thinking before action is time well spent. Also remember that they are likely to do a kind of thinking of their own if you don't direct their thinking in your way by providing them with something to think about—sources of ideas. Keep the atmosphere of the shop charged with ideas about the work in hand, the tools, the drawings, where and how the same job is done in industry, what principles of science are involved, cost and speed in production, etc. etc.—not all these at once, but some all the time. Be conscious of the fact that it is your job as the teacher, and your privilege as an elder brother to crowd out idle thinking as well as idleness by forcing into the shop atmosphere a constant, well-regulated stream of stimulating ideas as well as assigning jobs to do.



## CARPENTRY

**L**AST month we gave a sketch of a bicycle rack made by boys in the high school at Noblesville, Indiana. Since then we have learned that the boys in the Carpentry Department of the trade school at Torrington, Conn., have taken one further step and covered their rack with a roof. It is reported that they are



CHICKEN HOUSE FRAME

building a bicycle shed in the rear of the high school building. Perhaps this will be a suggestion to some teacher.

In the last issue, also, we recorded the fact that nine poultry houses were made by wounded soldiers at the New England Vocational School, Rutland, Mass. This too, may be a suggestion to some high school teacher.

## BUILD A CHICKEN HOUSE

The accompanying illustrations of a chicken house are reprinted here on account of the following letter received last December:—

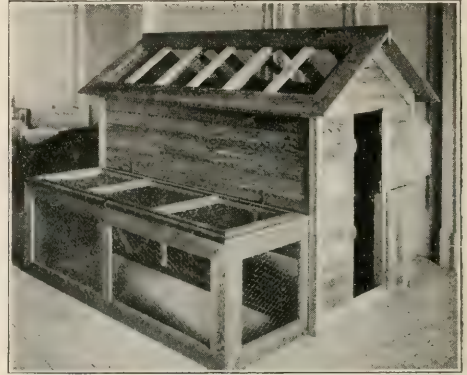
Dear Mr. Bennett:

I have a definite suggestion to offer for use in your course in Elementary Carpentry in your Shop Teachers' Service Department.

In working out the plan suggested in my article in the September number of your Magazine upon "Larger Projects Suggestive of Community Activity" we have made use of the chicken coop pictured

in the May, 1918, Manual Training Magazine in an article upon "Manual Arts in Portland" by E. G. Anderson, (page 303). The work has been done by a group of seventh and eighth grade boys who attacked the problem with commendable zeal and interest.

The problem should fit into your course very nicely as it offers opportunity for instruction in framing, use of larger materials, community work, with perhaps one boy acting as "foreman," and it is a practical problem, the use of which the boys



CHICKEN HOUSE COMPLETED, EXCEPT THE ROOFING PAPER

can see and the money for which will not be an obstacle in any community however small.

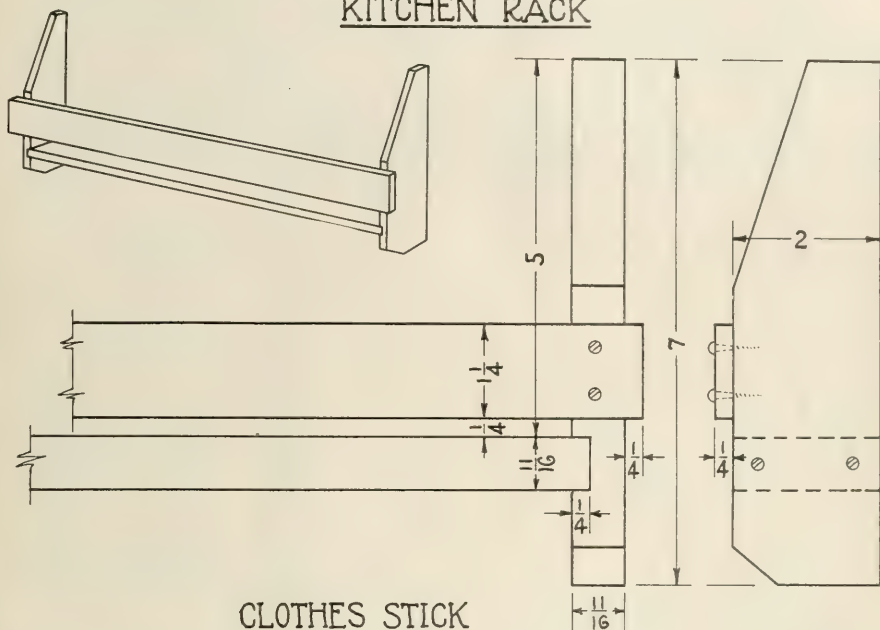
Very truly yours,  
Thomas R. Foulkes

The article in this number by Mr. Ericson gives in considerable detail the plan of organization that is needed to carry out a building project successfully. Be sure to read it.

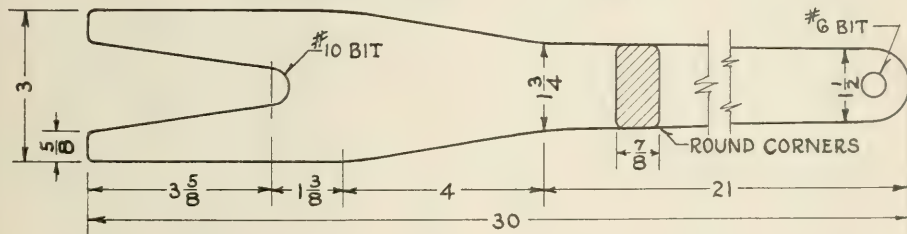
## CABINET MAKING

**T**HE Kitchen Rack shown in the accompanying drawing is one of several used as a second model for eighth grade classes in the Cleveland public schools. It serves in part as a review of principles worked out the previous year. Hooks, not shown in the drawing, are fastened to the underside of the shelf. A few dimensions, also, are purposely omitted from the drawing in order to encourage the student to decide what

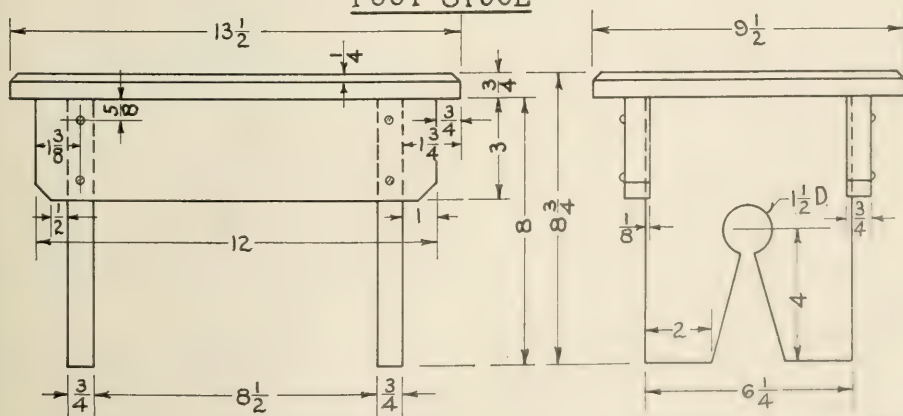
## KITCHEN RACK



CLOTHES STICK



FOOT STOOL



dimensions will give the most pleasing result on the end.

The Clothes Stick is one that has been used by Harris W. Moore as a school problem in Watertown, Mass.

The Footstool was contributed by the late H. W. Leland, of Fitchburg, Mass. When sending the design last March Mr. Leland said that it had "met with much favor, and will apparently 'go on forever' as it is chosen by many boys each year in an entirely elective and voluntary manner."

#### METALWORK

**T**HE two problems in sheet-metal work shown in the accompanying drawing are from the course used in Cleveland, Ohio. The first two problems in this series were shown in the August number.

#### A PAPER-SPINDLE

In starting a class in metalwork we are continually facing the problem of selecting some project that will involve the simple operations to be taught and at the same time promote interest and result in a finished product that is worth while. We are also more or less at sea in providing the necessary materials in quantities large enough to take care of the needs of all of the classes at the very beginning of the school year. (It is a calamity to be compelled to spend the first two or three weeks in making preparations and getting started since nothing is more disheartening and disgusting to a class of students than to be forced to loaf during the first few shop periods). It is with these facts in view that I present this article in the hope that it may be of value to those entering this type of work.

The paper-spindle described below furnishes excellent practice in chipping and filing work as will be seen by a study of the accompanying drawing. The materials required are cheap and are usually easy to obtain in unlimited quantities, the base being cast iron and the upright pieces steel or iron wire. (It is possible to provide for bases by cutting up old bars of cast iron found in scrap piles).

Referring to the drawing, Fig. 1 represents the top of the cast iron block from which the base is made, Fig. 2 represents the side of the block, Fig. 3 the wire to be attached to the base, Fig. 4 the top of the finished base, Fig. 5 the side of the finished base and Fig. 6 the com-

pleted spindle. No dimensions are given because of the ease with which they can be determined by the person giving the work to best suit his particular needs and desires.

Thus we have in this spindle a project that involves practical operations, one that is easily provided for, one that promotes interest and one that, when completed properly, presents a neat appearance and is of commercial value.

GEO. A. WILLOUGHBY.

Arthur Hill Trade School, Saginaw, Mich.

#### MINIATURE ANVIL

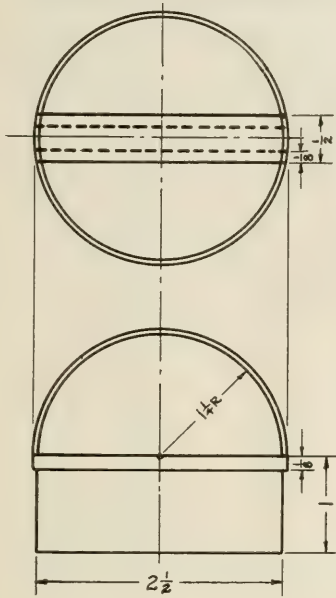
Chipping and filing work in machine shop courses is important in that these are two of the fundamental operations of the machinist trade. Students often have a dislike for this work and sometimes have the wrong feeling toward it from the start. The cause of the tendency for these operations to be unpopular is due largely, I think, to the fact that many teachers have given them with no other thought than exercise work in view. When I received my training in chipping and filing I was given a rectangular block of cast iron with a square opening in one side and told that it must be finished to certain given dimensions with the use of no other tools than a hammer, a chisel and a file. I was told also that not until this exercise was completed satisfactorily would I be permitted to do any other machine shop work. This fact furnished the real incentive to work hard and accurately. The fact that the piece when finished was to be returned to the foundry as scrap did away with any feeling other than "to get the blamed thing finished and get onto lathe work where I could make something." Perhaps similar conditions have helped to stimulate any dislike that may exist at the present time.

I believe that any tendency toward this feeling is done away with and in its stead considerable interest is created and pleasure derived by giving the small anvil paper-weight shown on the accompanying drawing. In using this project I have found that there is very little difficulty encountered in promoting interest and I have often had advanced students, who did not have the anvil in their regular course, ask to be permitted to make one during their spare time. In fact, many of the older students in college made anvils a little larger than this one during their last year. They are quite a novelty.

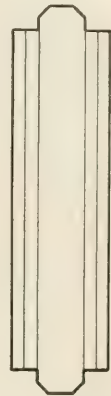
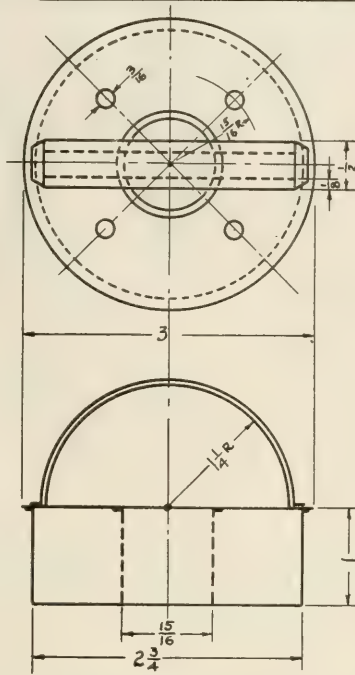
This paper-weight will be seen from the drawing to be a project furnishing a variety of chipping and filing work. In finishing the bottom we have the smoothing of a flat surface; the top is a surface parallel to the bottom; the sides of the upper



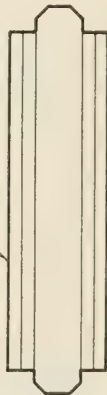
# BISCUIT CUTTER



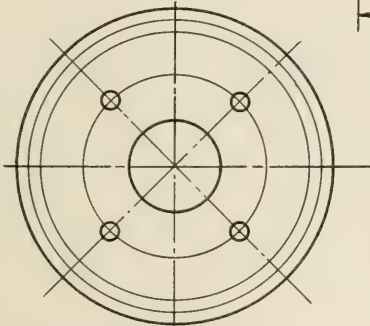
# DOUGHNUT CUTTER



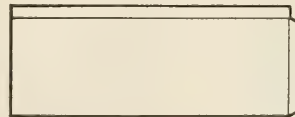
HANDLE



HANDLE

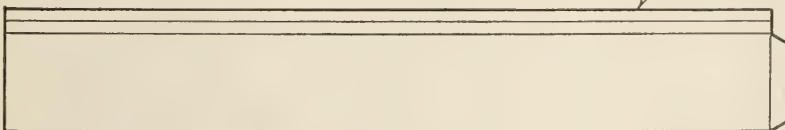


TOP OF DOUGHNUT CUTTER

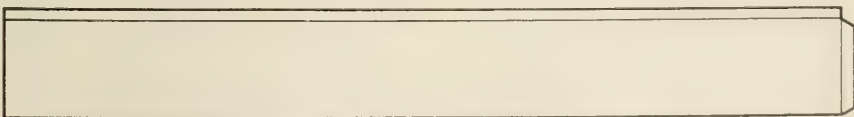


INSIDE BAND OF DOUGHNUT CUTTER

DOUBLE HEM



BODY OF BISCUIT CUTTER



OUTSIDE BAND OF DOUGHNUT CUTTER



part require the finishing of surfaces at right angles to another flat surface; the horn furnishes round and pointed work; and the lower part of the base gives practice in filing the junction between a curved and a flat surface. Then, if it is possible to drill a hole in the top of the anvil, inside filing practice can be brought in.

The material used may be cast iron, brass or aluminum, which will have to be cast and which will, of course, require the making of patterns. But the patterns are not very difficult to make and it is usually easy to obtain unlimited numbers of castings. If there is no foundry available, it is possible with one snap-flask and a little molding sand to make castings of aluminum which can usually be purchased in the form of scrap at about thirty cents per pound and melted in a babbitt ladle in a forge. The weight of an aluminum anvil is less than half a pound.

Thus we see that in using this anvil as a chipping and filing project that we furnish some very good and interesting work at a cost of only a few cents per pupil and we have a finished product that is not only worth while but one that will easily bring its cost price if the student is permitted to buy it.

GEO. A. WILLOUGHBY.

#### THE LENGTH OF WOOD FIBERS

The current supposition that each species of wood has a characteristic fiber length is not borne out by the many thousand measurements which have been made at the Forest Products Laboratory on wood fibers. These measurements show that a greater difference may be found in one tree than exists between the average fiber lengths of different species.

In one Douglas fir disc, for example, the fibers varied from .8 to 7.65 millimeters (.03 to .3 inches) in length, which is a variation of nearly 7 millimeters. On the other hand, the averages of several thousand measurements on Douglas fir and long-leaf pine were less than one millimeter apart, being 4.41 and 3.67 millimeters, respectively.

In the first case, 67 per cent of the fiber measurements in one tree fell between 4.5 and 6.5 millimeters, which roughly indicates the meaning of the common term "average fiber length" for the tree or species.

Such data obviously can be of little value for identification purposes, because of the overlapping of the ranges of fiber length in the various species.

Some relations have been observed between the length of fibers and their position in the tree. During the first 20-50 years of growth, the increase in fiber length from the center of a tree outward in any plane is very striking. An approximate maximum having been attained, fiber length, though it may

fluctuate somewhat, does not radically change thereafter, even in trees 400 or more years old. Some increase in fiber length occurs also for about two-thirds of the distance from the butt to the top. Within each annual ring the length of the fibers varies, particularly in the conifers, where the early springwood has the longest elements, and the last-formed cells of summerwood the shortest in the ring.

No clearly defined relationship has been found between fiber length and the strength of wood. The longer fibers are often found in the weaker material.

—FOREST PRODUCTS LABORATORY

U. S. Forest Service, Madison, Wis.

#### THE FADING OF BLUEPRINTS

*Question:* Please advise me if there is any way of treating a blue-print to keep it from fading.

—J. D. C.

*Answer:* We do not know of any. An expert in blue-printing informs us that all blue-prints will fade more or less if left in the sunlight, but that prints from slow-printing papers fade less than those from fast-printing papers. To produce the fast-printing papers a chemical is added to the sensitizing solution which increases its sensitiveness to light.

To reduce the amount of fading, then, (a) use slow-printing paper, (b) be sure to wash the prints thoroly, and (c) keep them out of the bright sunlight as much as possible.

#### ZINC FOR ETCHING

*Question:* I would like to know where I can obtain zinc polished on one side for making zinc etchings. The writer of the article in your Magazine said it could be obtained from any etching house. I don't know where to write to reach a house handling materials for etchings.

—H. H. S.

*Answer:* Write to the Harold Pittman Co., 1430 So. Rockwell St., Chicago, or to the National Steel and Copper Plate Co., 542 So. Dearborn St., Chicago, or other offices in several large cities or the Dom Supply Co., Cincinnati, Ohio.

#### CLEANING THE SOLDERING IRON

A quick way to clean the soldering iron is to dip it into a jar with water and sal ammoniac. A glass tumbler with a cover, about three inches of water and just enough sal ammoniac for the water to dissolve, will prove handy near the soldering bench.—H. G. Shumacker, Detroit.



## CURRENT PUBLICATIONS

*Teaching Manual and Industrial Arts.* By Ira S. Griffith. The Manual Arts Press, 1920. Size 5 1/4 x 7 5/8 in.; 229 pages; price, \$2.00.

This book is a clear and practical presentation of the principles of modern psychology as applied to teaching manual training and industrial education. It takes the conclusions of Thorndike, Judd, Bagley, Dewey and others, restates them for the teacher of shopwork and drawing, discusses them and illustrates them. It is presented in the form of a textbook for college and normal school students preparing to teach or supervise handwork instruction, but it is at the same time a valuable book of reference on teaching. Any thoughtful teacher in this field whether a beginner or a supervisor of long experience, will profit by a study of this book.

### RECEIVED

*Bulletin No. 32. National Society for Vocational Education.* This is a report of the joint convention of the National Society for Vocational Education and the Vocational Education Association of the Middle West, held last February. It is a pamphlet of 255 pages. The main theme of the report is "The Significance to Vocational Education of the Present Economic Unrest."

*Proceedings of National Conference on Concrete House Construction* held in Chicago February, 1920. This report is issued by the secretary of the conference, whose address is 111 W. Washington St., Chicago, Illinois. It is an illustrated report of 235 pages and will be of special interest to teachers of concrete construction work.

*The Junior Red Cross in School.* A pamphlet issued by the American Red Cross, Washington, D. C., giving the plan of organization and program of work of the Junior Red Cross.

*Continuation Schools Number.* The June issue of *Educational Foundations*. Published by the Educational Magazine Company, 1927 Flatbush Ave., New York City. This special number contains articles by William L. Ettinger of New York, Owen Evans of Boston, R. L. Cooley of Milwaukee, S. W. Rader of St. Louis, and I. David Cohen of Brooklyn.

*The David Ranken Jr. School of Mechanical Trades.* Eleventh annual catalog. Illustrated.

*Manual Training Booklets No. 1 and No. 2.* Issued by the Southwestern Division of the American Red Cross, price 10 cents each. The first of these contains drawings and specifications for a variety of playground apparatus. The second contains drawings and specifications for a good variety of problems in concrete construction. Both of these pamphlets will be very useful to shop

teachers. Address, 901 Equitable Building, St. Louis, Mo.

*Civic Training Thru Service.* By Arthur William Dunn. Teachers' Leaflet No. 8. Issued by the United States Bureau of Education, Washington, D. C.

*Plan of Safety Instruction in Public and Parochial Schools.* By Dr. E. George Payne, principal of Harris Teachers College, St. Louis, Mo. Published by the National Safety Council, 168 North Michigan Ave., Chicago, Ill.

*Coal Mine Ventilation.* Bulletin No. 41. *Coal Mine Timbering.* Bulletin No. 40. Issued by the Federal Board for Vocational Education, Washington, D. C.

*Farm Gardening as a Vocation.* An illustrated pamphlet issued by the Federal Board for Vocational Education. This is No. 44 in the Vocational Rehabilitation Series.

*Elements of Physics.* By R. A. Houstoun, lecturer on Physical Optics at the University of Glasgow. Published by Longman, Green & Company. This is a textbook of 221 pages.

*General Mining.* Bulletin No. 38. Issued by the Federal Board for Vocational Education, Washington, D. C.

*Safety Lamps.* Bulletin No. 42. Issued by the Federal Board for Vocational Education, Washington, D. C.

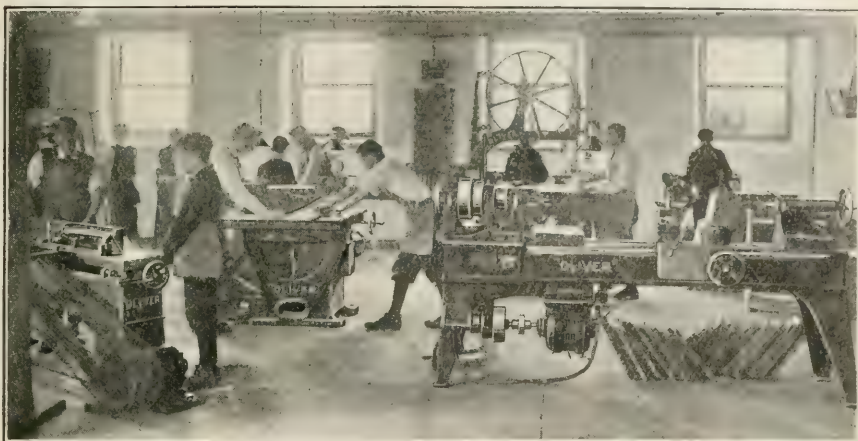
*Lessons in Plant Production in Southern Schools.* Bulletin No. 53. Issued by the Federal Board for Vocational Education, Washington, D. C. This is published in order to supply information and suggestions concerning the nature and conduct of a one-year vocational course in plant production in the Southern states.

*Organization and Administration of Part-Time Schools.* A bulletin issued by the University of the State of New York, Albany, N. Y.

*The Need for Vocational Guidance in any Plan of Vocational Education.* By John M. Brewer, of Harvard University. A 13-page reprint from *Educational Administration and Supervision*.

*Initial Report of the Present Hardwood Lumber Situation in the Southern Producing Territory.* Compiled by Harold E. Everley, Special Investigator. Published by Committee on Lumber, National Council of Furniture Associations, 531 Monadnock Bldg., Chicago, Ill.

*The Boy Who Came Back.* By Arthur L. Drew. Published by the National Physical Education Service, Washington, D. C. Price, 5 cents.



**Woodworking Section Industrial Shops Farrel (Pa.) High School**

Mr. J. Edward Strebig, Director Industrial Education, Farrel, Pa., writes "We have a Woodworking Section with an intensive course in Patternmaking. This necessitates machinery that will stand an amateur's hard handling, that will hold up thru much starting and stopping, that is well guarded. All of these qualifications can be found in Oliver Machinery. We have one planer, one jointer one band saw, one grinder, one mortiser, one pattern-makers lathe, and five smaller lathes, a universal sawbench, every machine an "Oliver" and highly satisfactory."

**OLIVER MACHINERY CO.**  
**Grand Rapids, Mich., U. S. A.**

## **\$1500 Award For School Pupils**

PRESIDENT ALVAN T. SIMONDS of Simonds Manufacturing Company, "The Saw Makers" of Fitchburg, Mass., offers two prizes of \$1000 and \$500 for the best essay of from 10,000 to 30,000 words, written by pupils of High Schools or Normal Schools of the United States or Canada. The subject selected for these essays is—

**PRESENT ECONOMIC CONDITIONS AND  
 THE TEACHINGS OF ADAM SMITH  
 IN THE WEALTH OF NATIONS.**

REMEMBER—Competition is open to both boys and girls. If interested send eight cents in stamps to the Contest Editor, Simonds Manufacturing Company, 474 Main Street, Fitchburg, Mass., and receive a synopsis of the Wealth of Nations and copy of the rules governing the contest.

# V. & B. TOOLS

All Patterns of Hammers, Braces,  
Pincers, Punches, Nail Set,  
and Small Tools



NAIL HAMMER

Every V. & B. Tool is individually  
tempered and tested.

We will gladly send copy of our  
catalogue and circulars of interest to  
students.

V. & B. Tools are sold by all leading  
Hardware and Supply Dealers.

**VAUGHAN & BUSHNELL MFG. CO.**

Makers of Fine Tools

**CHICAGO**

## Mummert-Dixon Oilstone Grinders



The Modern  
Edge Tool  
Sharpening  
Machines.

The  
Standard  
for all  
Industrial  
Schools.

No. 481—Motor or Countershaft Drive  
An automatic attachment for grinding long knives can  
be furnished with this machine.

### THE FIVE LEADING FEATURES:

- |  |                 |
|--|-----------------|
| 1 Coarse Oilstone Wheel,                 | 3 Grinding Cone |
| 2 Fine Oilstone Wheel,                   | 4 Leather Wheel |
| 5 Emery Wheel. All at your finger's ends |                 |

Send for full descriptive bulletin

MUMMERT-DIXON CO., Hanover, Pa.



## FIELD NOTES—(Continued)

M. S. LEWIS, state director of vocational education for Idaho, is reported to have said recently that Idaho leads all the Northwestern states except Washington and many Eastern and Middle Western states in the number of high schools that have taken advantage of the Smith-Hughes act for instruction in vocational training. Idaho and Washington has 26 schools working under this act.

SALT LAKE CITY has been carrying on summer courses in manual training in five of its public schools, including one high school. The instruction covers work in electricity, cement, sheet-metal, wood, pottery, gardening, repairing bicycles and poultry raising.

TOPEKA, KANSAS, is to establish a prevocational school this fall to which pupils from the fifth thru the eighth grades will be admitted. This is to be in a building which has not been in use for school purposes since the erection of the junior high school building.

THE DAVID RANKEN JR. SCHOOL OF MECHANICAL TRADES in St. Louis graduated a class of 58 on July 14th. This brings the total number of graduates of the school up to 572. It opened in the fall of 1909 with 20 students. During the past year 1623 boys and men have been in attendance—440 in the day school and 1188 in the evening classes.

IT IS ESTIMATED that if the state of Florida accepts the terms of the Federal law it will get \$30,800 a year of Federal funds for the promotion of industrial rehabilitation.

THE FORD MOTION PICTURE LABORATORY is engaged in the production of educational films on a large scale. These films will be known as the "Ford Educational Library," will be especially for classroom use and will be easily obtained. The sole representative of the Laboratories is Fitzpatrick and McElroy, 202 So. State St., Chicago.

THE VOCATIONAL WORK at Troy, N. Y., "is exceeding itself" each year. The latest proposition concerning it is to establish a class in printing this fall in the Troy Central High School.

A law has been enacted in New York State which provides for the rehabilitation of physically handicapped persons. Under the provisions of the act the State Department of Education is given the responsibility for the advisement, retraining and placement of persons who are physically handicapped. The Act also amends the Workmen's Compensation Law and provides that the insurance carriers shall pay to the Industrial Commission the sum of \$900 for each person, who dies as a result of injuries received in industry, who has no dependents. It



**Stanley  
Tools**

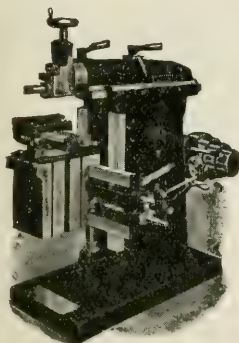


## Stanley "Bed Rock" Planes

The ease and accuracy with which the student can adjust these Planes for a wide or narrow throat opening make them ideal tools for Manual Training use.

Our special "Bed Rock" rircular will prove of interest to both teachers and scholars.

**STANLEY RULE & LEVEL CO.  
NEW BRITAIN, CONN. U.S.A.**



A small Shaper and Milling Machine are absolutely necessary in school work as the work is necessarily small. Small work can best be done on a small

## STEPTOE SHAPER or MILLING MACHINE

They will produce small parts quicker than the larger machines.

They will take up less space.

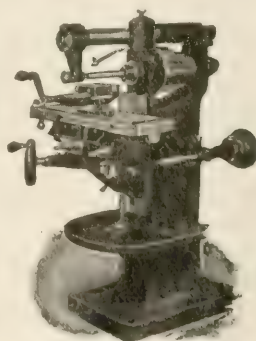
They will cost less money and you can buy more of them with the same appropriation.

They can be handled easier and quicker by the student than the larger, heavier types of machines, and our seventy-five years of experience with thousands of machines in use giving daily satisfaction are a recommendation for our product that you should not overlook when buying your equipment.

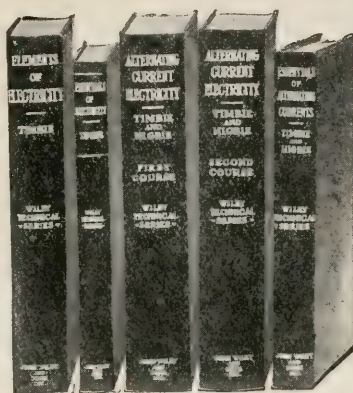
**JOHN STEPTOE CO.**

**Northside**

**Cincinnati, O.**



# Wiley Electrical Texts



## The Works of W. H. TIMBIE, and W. H. TIMBIE & H. H. HIGBIE

Unsurpassed as texts for vocational courses. Workmen on the job who wish to advance themselves through the medium of self-instruction will also find them invaluable.

Simply and clearly written with a minimum of mathematics.

Send the coupon for FREE EXAMINATION copies of these or any other "Wiley" books.

John Wiley & Sons, Inc., 432 Fourth Ave., N. Y. City.

You may send me the following on 10 days' approval:

I agree to pay for the books or return them within 10 days of their receipt.

Also please send me a copy of your Vocational News, and put my name on your mailing list.

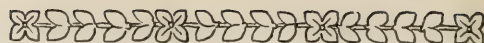
Name.....

School.....

Official Position.....

Address.....

MTM-7-20



## FIELD NOTES—(Continued)

is estimated that this provision will give the Industrial Commission approximately \$200,000 annually to use in paying additional compensation to persons undergoing vocational rehabilitation. The Act also appropriates \$75,000 to provide for the advisement and retraining of these persons.

HARRY W. LAWSON, head of the manual training department of the high school at Framingham, Mass., together with his assistants and about sixty boys, are looking with satisfaction on a portable building which they have completed this year for the use of sewing classes in the school. It stands in the rear of the school building and is connected by a board walk constructed by the boys. The construction of this building has formed the chief work of the boys in the high school classes during the year, and has furnished a variety of valuable and interesting problems. The building is 24x36 feet on the ground and is built in sections so that it may be taken apart and removed to another location at any time. The building has proved to be an interesting community problem.

## PRANG ART BOOKS

### "THE THEORY AND PRACTICE OF COLOR."

By Bonnie E. Snow and Hugo B. Froehlich. The most authoritative work on "Color" issued in this country. Illustrated with hand painted "Color Charts" of great value. Large quarto, price \$4.00; by mail, \$4.25.

### "ART SIMPLIFIED." (Revised Edition.)

By Pedro J. Lemos and John T. Lemos. A book of practical instruction in Art for advertisers, commercial artists, teachers and students. 22 full-page plates, 175 pages. Price \$4.00; by mail, \$4.25.

"LETTERING"  
By Thomas Wood Stevens, of Carnegie Institute. The standard work on the subject for students and artists. 110 full page plates. Large quarto. Price, \$3.00; by mail, \$3.25.

### "CONSTRUCTIVE ANATOMY"

By G. B. Bridgman, Art Students League. The newest and most authoritative book on the subject. Price postpaid, \$7.50.

### "A SHORT HISTORY OF ART"

By De Forest and Ciffin. The most comprehensive single volume on the subject, comprising 758 pages with 289 illustrations. Price, \$4.00; by mail, \$4.25.

### "FIRST LESSONS IN BATIK"

By Mary C. Scovel, Head of the Normal Department, Art Institute of Chicago.

A practical handbook, giving full information for Batik dyeing on many different fabrics. Beautifully illustrated with cuts from original Javanese Batiks. Price, \$1.50; by mail, \$1.60.

### "PERMODELLO MODELING"

By Bonnie E. Snow and Hugo B. Froehlich. Gives full directions for innumerable uses of "Permodello," the permanent Modeling Clay, which sets like concrete without firing. Beautifully illustrated. Price, \$1.50; by mail, \$1.60.

Send for Descriptive Circulars and New "Prang Bulletin."

## THE PRANG COMPANY

30 Irving Place, New York City  
1922 Calumet Ave., Chicago



## Why Teach With Standard Forges?

**S**TUDENTS receiving training on standard forges acquaint themselves early with the details of equipment such as they will use throughout their industrial life. They leave school finished workmen ready to accept the problems before them without indecision—but in full possession of a sense of confident in their ability to succeed without having to learn what standard equipment is and what it can do.



The design construction and wide range of adaptability so conspicuous in Sturtevant Forges and Forge Systems has won pronounced approval from instructors in many technical and manual-training schools where this equipment is used. It is approval based upon continuous satisfactory performance.

Prospective purchasers will reflect with confidence upon the organization back of Sturtevant equipment. Years of training and application in air moving apparatus have found expression in this simple, clean, convenient, and troubleproof forge system. Your personal investigation of an actual installation will be impressive. Communicate with us and we will gladly cooperate.

**B. F. STURTEVANT COMPANY**  
HYDE PARK, BOSTON, MASSACHUSETTS  
AND ALL PRINCIPAL CITIES



# SHOP APRONS

*Guaranteed*

Adjustable  
Neck  
Strap

Saves  
Many  
Times  
Their Cost



**The Apron You Can Buy  
with Confidence**

Standard  
Equipment  
In the  
Best Schools  
Everywhere

Instructors Apron free with first order

Price, White 75c

Price, Brown 80c

Delivery Same Day

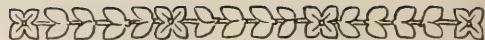
Send no money—Just your order to

**CANVAS PRODUCTS  
CORPORATION**

19-21-23-E. McWilliams St.

School Dept.

FOND DU LAC, WISCONSIN



## TRADE NOTES

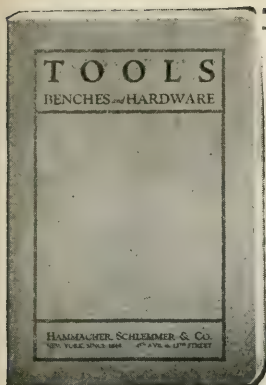
“HACK Saws and Their Use” is the title of a 63-page booklet recently published for free distribution by The L. S. Starrett Co., of Athol, Mass. The purpose of the book is to promote the intelligent, efficient use of hack saws of all makes rather than to solely advertise Starrett hack saws.

It is a publication of real value to machine shop teachers and to all users of hack saws, particularly the large class of men to whom a hack saw is merely a hack saw. In its preparation the publishers have endeavored to be as impartial and fair to all manufacturers of hack saws as possible. Information and data have been checked with the experience of other manufacturers and in all cases statements have been made to cover hack saws in general rather than Starrett saws alone. The book is illustrated with drawings, diagrams and photographs.

As the literature on this important subject is singularly deficient teachers will welcome this book because of its complete treatment and the authoritative information which it contains.

SCIENTIFIC methods of manufacture, regardless of cost, and covering over nine years of research and experimentation, has enabled the National Tracing Cloth Co., Saylesville, L. I., to market their “National” brand with absolute certainty of results. To those unfamiliar with their line, they offer a free sample and invite a personal test. Prices will be quoted on request. The company will also be glad to furnish a detailed statement of the care taken in manufacture to produce the results which mark the “National”.

THE SOUTH BEND LATHE WORKS, South Bend, Indiana, have just issued Red Book No. 61, which contains a number of interesting as well as instructive features. Interior views of four of their shops are shown, including two lathe assembling rooms, a section of their planer department, and a view of another room containing 1,000 finished lathe beds. In addition a complete mechanical description of each of their various sized lathes is given, also a description of various lathe tools and attachments. Red Book No. 61 shows the possibilities of service offered by this enterprising firm better than anything they have sent out. They study the needs of the school shop and endeavor to meet them. Machine shop instructors will be interested in the booklet.



# GOOD TOOLS

Are Essential For

## GOOD WORK

Since 1848 we have adhered to one policy.

To handle only the very best in quality.

Our new Catalog No. 208 of over 300 pages is of particular value to those interested in VOCATIONAL TRAINING.

Copy upon request.

## Hammacher Schlemmer & Co.

HARDWARE TOOLS AND SUPPLIES

NEW YORK, Since 1848

4th Ave. and 13th St.



## Universal Grinders

Will handle almost any job of machine shop grinding, cylindrical, internal or surface.

They will sharpen accurately, milling cutters of all shapes, reamers, counter-sinks and counterbores.

The large assortment of Attachments furnished are simple and easy to adjust.

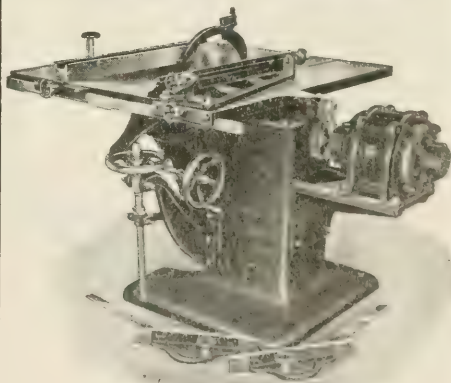
Our No. 7 catalog shows these Attachments set up for 23 different grinding operations.

We will be glad to send one free to any instructor.

**Greenfield Machine Co.**  
Greenfield, Mass., U. S. A.

## SAW TABLES

For MANUAL TRAINING



This cut shows our motor driven spiral gear saw table. No countershaft, no belts. Tilting or stationary tops. Write for circular and prices on our entire line. Address

**ALEXANDER DODDS CO.**  
451-453 Monroe Ave., N.W.  
GRAND RAPIDS, MICHIGAN, U. S. A.

## FORSE APRONS



700 Long Street

For Wood Shop, Print Shop, Machine Shop and Laboratory.

4 styles in white and tan. Wear-proof duck and acid-proof fabric. "Never-rip" pockets and seams.

Free Apron to Instructor with first order.

FORSE MFG. CO.  
Anderson, Indiana

## Tools for Sheet Metal Work

Manual training, vocational and technical schools are invited to communicate with us regarding equipment of shops for sheet metal work, the importance of which is constantly increasing, owing to the popularity of sheet metal as a substitute for other materials.

Ask for catalog M T 56.

**NIAGARA MACHINE AND TOOL WORKS**  
BUFFALO, N. Y.

Manufacturers of  
MACHINERY FOR WORKING SHEET METALS

## VENUS PENCILS

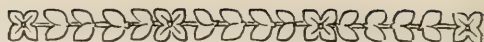
From the softest grays to the deepest blacks the illustrator finds his best expression in the superb VENUS—the perfect pencil.

17 black degrees, 6B softest to 9H hardest; and 3 copying, for any pencil purpose.

**American Lead Pencil Co.**  
219 Fifth Ave., Dept. A, New York  
also London, Eng.

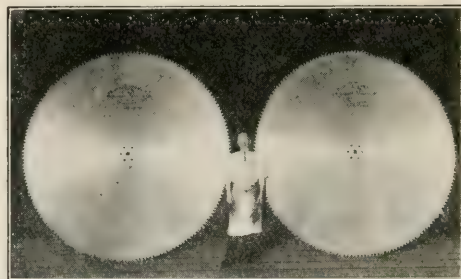
Use Venus Pencils  
and you will know  
why they are

The largest selling  
Quality pencil in  
the World



### TRADE NOTES—(Continued)

A SOLUTION of your glueing problems is to be found by the use of Monite Waterproof Glue manufactured by the Casein Glue Mfg. Co., 136 West Lake St., Chicago, Ill. Monite Waterproof Glue comes in powdered form and is made ready for use by mixing with water in proper proportions. Its convenience, and excellent qualities render it especially adaptable to school conditions. The manufacturers whose announcement is to be found elsewhere in this issue, make a specialty of small packages for school use and are in a position to render helpful service to educational institutions.



HENRY DISSTON & SONS, INC., of Philadelphia, have recently finished two of the largest Circular Saws ever made. They are of the spiral inserted tooth type, and are to be used by a well-known concern in the far West for cutting shingle blocks from the large trees of that section. Each of the new saws measures 108 inches (9 feet) in diameter, and in the rim are inserted 190 teeth. As long ago as 1876 the firm made one 100 inches in diameter for exhibition purposes. Some years after they made another 100-inch saw for cutting stone, each tooth of which was studded with a black diamond to give the necessary cutting edge. The photograph of the two saws with a man standing between them gives one an idea of their gigantic size.

THE IMPROVED Micrometer Caliper manufactured by Reed Small Tool Works, Worcester, Massachusetts, U. S. A., embodies several valuable features, chief among which is the method of adjustment for wear on end of anvil and spindle.

The Micrometer Caliper frame is of drop forged steel and finished in dull nickel, which is a lasting finish and eliminates the objectionable crumbling or sealing characteristic of the enamel finish. It is pleasing in design and "hangs" well for the machinist who will appreciate the deep throat allowing plenty of finger room, and the concave frame which is a natural finger





Paradise Valley  
By Earl Horter



Earl Horter calls them "fortunate accidents of light and tone"—delicious bits of pencil shading that are never thought out, but seem to just happen.

And the beauty of it is, they seem to "just happen" oftener with Dixon's Eldorado than with any other pencil!

**DIXON'S  
ELDORADO**  
*"the master drawing pencil"*

**SAMPLE OFFER TO TEACHERS**  
Dixon's Eldorado is made in 17 leads. Tell us whether you teach mechanical or freehand drawing and we will mail you suitable samples.

JOSEPH DIXON CRUCIBLE COMPANY, Pencil Dept. 19-J, Jersey City, N. J.



Jacksonville, Florida

good cities in all parts of the country.

Write for details.

**SPECIALISTS'**

EDUCATIONAL BUREAU

takes three of our candidates for Manual Arts work. Have sent our members to Fine emergency positions open.

**ODEON BUILDING**

ST. LOUIS, MO.

Branch Office, Berkeley, Cal.

**A. R. VINNEDGE & COMPANY**

**MANUAL TRAINING LUMBER**

1436 Cherry Avenue

CHICAGO, ILL.

**BLACK WALNUT**

For Turning, Carving and

Cabinet Making.

STUDENTS.

Write for price list of special combination assortments, packed ready for shipment by Parcel Post or Express.

**MANUAL TRAINING SCHOOLS**

Order your Black Walnut for Carving, Turning and Cabinet Making from

**FRANK R. PORTER & CO.**

500 THIRD STREET NORTHWEST

WASHINGTON, D. C.

Our Price List forwarded promptly upon request.

**LETTERING CARD**—By E. S. Maclin

A card of alphabets. Shows Gothic capital and small letters both straight and slant. Printed on bristol, size 4" x 8". In packets of 10. Per packet, 35 cents.

**THE MANUAL ARTS PRESS,**

Peoria, Illinois

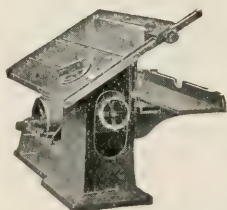
**IMMEDIATE  
DELIVERY ON**



## **Drawing Instrument Sets**

WRITE FOR CATALOG AND  
PRICE LIST TODAY.  
DO NOT DELAY YOUR ORDERS—  
SUPPLY LIMITED.

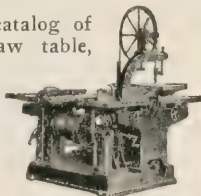
**FREDERICK POST COMPANY**  
Dependable Supplies for  
Engineers, Architects and Schools.  
**CHICAGO**



## **Crescent Wood Working Machines**

are the tools your students will eventually use so give them the opportunity now of learning about this splendid line of wood working machinery.

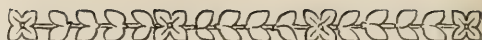
Send today for our catalog of band saws, jointers, saw table, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinders, borers, hollow chisel mortisers, Universal wood workers.



**The Crescent Machine Co.**

46 CHERRY ST.

LEETONIA, OHIO



### **TRADE NOTES—(Continued)**

grip. It is designed specially to work in close places, and is compactly made with a minimum number of parts. It is manufactured in sizes from one-half to six inches, each size having a range of one inch, with corresponding sizes in the Metric System.

It has been the aim of the manufacturers of the Reed line of Micrometer Calipers to produce a Micrometer, simple and sturdy in design and construction, pleasing in appearance, accurate to the Johansson Gage test and at a price low enough to place the tool in the hands of students and apprentices. The manufacturers state that their sales prove the popularity of the tool and confirm their belief that the Reed Micrometer is fulfilling a long-felt want in the mechanical world.

Most of our readers are familiar with the Fox Universal Wood Trimmers and Miterers manufactured by The Fox Machine Co., Jackson, Mich., hence they will be interested to learn that J. A. Fay & Egan Co., Cincinnati, Ohio, have acquired patterns, drawings, patents, and trade-mark rights on these machines. All orders for new machines, or for repairs for machines now in use will be furnished by J. A. Fay & Egan Co.

In the July issue of this Magazine reference was made to an article in a recent issue of "The Lighting Line", the house organ of Fay & Egan, which gave a short history of the firm. Through an error in proof reading it was stated that the firm had been in business nineteen years, whereas it should have read ninety years.

## **Build Your Own PHONOGRAPH**

Instructive—arouses pupils' enthusiasm—provides one of the best problems in cabinet making.

Let Your Pupils Build  
Choraleon Phonographs

We furnish, plans, blue prints, motors, tone arms, case material—in fact, everything required. Full instructions. Choraleon's have fine tone. Play any record.. Ask for particulars.



**CHORALEON PHONOGRAPH CO.**  
920 7th St., Elkhart Ind.



## BOOK NOTES

IN SPITE of the fact that there are many books on mechanical drawing it is still true that if one is looking for an inexpensive book for beginners that tells in detail just what a pupil should do and how he should proceed in order to rapidly acquire the technic of a draftsman he cannot find it. This has been the observation of many teachers of beginning classes. Whether any such book could be written to satisfy all such teachers is extremely doubtful, but The Manual Arts Press believes that they have in progress a book that will satisfy a great many of them. This book is entitled *Mechanical Drawing for Beginners* written by Professor Charles H. Bailey of the Iowa State Teachers College. It is the result of years of study of this problem.

THE Manual Arts Press has just taken over the publication of a very convenient lettering card prepared and formerly published by E. S. Maclin, Industrial Supervisor in the State of Tennessee. It shows the stroke and form of vertical and inclined Gothic letters, both capitals and lower case, also figures. All these, with illustrations of spacing, are on a card about 4 x 8 in. The will be sold in packages of ten each at 35 cents a package.

With very limited advertising these cards have already been used in quantities in several large schools and school systems because they have met a need for a compact and inexpensive card.

THE AUTHOR of *Elementary Machine Shop Practice*, T. J. Palmateer, has gone thru an experience in teaching machine shop work that has convinced him that he can accomplish much more in teaching a class of beginners with a book than he can without one. He says that in the Stanford University machine shop as much was done in 60 hours with his book as was previously done in 90 hours without the book. His observations are these:—

*First*, Students do better work, learn more, and complete the problem in a shorter period of time.

*Second*, The information and the instructions are much clearer than when given offhand in the shop.

*Third*, The instructor need not answer the same question several times.

*Fourth*, Students do not have to depend entirely upon the instructor, which is advantageous because it often happens that a number of beginners need help at the same time. This develops initiative, eliminates idleness, and promotes efficiency and discipline.

*Fifth*, A textbook of this type serves to standardize the course. At the present time there are almost

as many different standards for the elementary course as there are schools.

*Sixth*, It helps in training students to read and understand technical English.

*Seventh*, The instructor is able to handle a large number of students efficiently.

The book does not take the place of the demonstration, but it supplements it in a most effective manner."

*Educational Toys* is the title of a very interesting collection of working drawings of toys that will soon be forthcoming from The Manual Arts Press. The toys in this collection have been selected with reference to the interest of the children in making them and playing with them after they are made, also with reference to the educational value of the tool processes and the study of mechanism incident to their construction. Most of the drawings are full size so that they may be traced directly from the book. The author of this book is Louis C. Peterson, director of manual arts, State Normal University, Carbondale, Ill.

From a letter received concerning *Carpentry*, by Griffith, the following is taken:

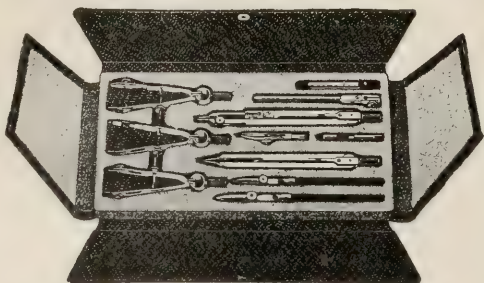
"It is encouraging in these days of the growing interest in vocational training to find the subject of carpentry presented in such a clear and definite style. Your work is very logically arranged, progressing as it does from the laying out of the building to the final roof framing and interior finish. The press work is excellent and the book has a very inviting appearance."

"Your chapter on 'Estimating' furnishes, in a condensed manner, information that will be valuable for many who have since passed the stage of apprenticeship."

THE Manual Arts Press has on hand a few more packages of the Work Sheets published last year. No more complete sets are available, but *Elementary Carpentry* sheets in packages of 12 duplicates each can be furnished for September, October and November at 50 cents each and similar packages for *Elementary Cabinet Making* for the same months and at the same price. There are a few packages for the other months except for May and June. There are enough to help a few teachers to start their work well this fall.

Teachers who do not have a print shop of their own and print their "Bill of Material" forms will be glad to use the one issued in pads by The Manual Arts Press.



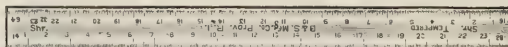


## U. S. DRAWING INSTRUMENTS

are the best for shop drawing.  
Write and give requirements.

U. S. BLUE-PRINT PAPER CO.  
CHICAGO, ILLINOIS

## Patternmaker's Shrinkage Rules



We carry the largest and most complete stock of Patternmaker's Shrinkage Rules in the Middle West; including the following well-known brands: Stanley Boxwood Rules; Lufkin Boxwood Rules, Lufkin Steel Rules, Brown & Sharpe Steel Rules and Starrett Steel Rules. Write us for Prices.

Our new complete catalog of Patternmaker's Supplies, Tools and Equipment is now ready. Write for your Copy.

**ADAMS & NELSON CO.**

1328 W. North Avenue

CHICAGO, ILL.

## THE BEMIS STANDARD VISE

Fitted with a continuous, fast running double-thread steel screw, making it positive and quick. It will not slip, catch or let go. Buy of the Patentee-Beware of Infringements.

PRICES { No. 1, plain \$3.50  
          { No. 3, with dog, 3.75  
          { No. 5, with dog, 3.75

Send for descriptive circular.

**A. L. BEMIS**

71 Commercial St.

Worcester, Mass.

## THE REED



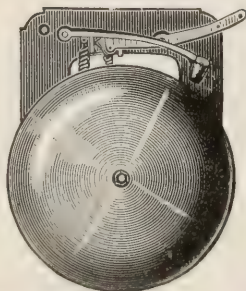
Catalog No. 4  
tells the story of  
Reed Value—and  
has valuable tables.

**REED SMALL TOOL WORKS**

28 Cherry Street

WORCESTER, MASS.

## GONGS



Suitable for fire alarm, fire drill, or any place where an alarm, or signal is needed. Mechanically operated and can be depended upon at all times. Made in sizes ranging from 4-inch up to 16-inch diameter. Gong shells are made of carbon steel, highly polished and nickel plated. Very loud ringing and durable. Send for price-list.

**WALLACE SUPPLIES MFG. CO.**  
414 Orleans St.  
CHICAGO, ILLINOIS

These bases are extremely useful in building work-benches and aside from making a very durable construction they effect a considerable saving as they are practically indestructible and can be moved from place to place as occasion may require. Price upon application.

## BENCH BASES Type "H"



# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.

WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City.

EDITORS FRANK M. LEAVITT, Associate Superintendent Public Schools, Pittsburgh, Pa.

WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON.

Published monthly by The Manual Arts Press, 237 N. Monroe St., Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

## CONTENTS

THE VOCATIONAL SCHOOLS OF BUFFALO—HUNTING HIGH POINTS IV.—(Illustrated) .....	Charles A. Bennett 91
A NEW METHOD OF EDUCATIONAL WORKSHOP MANAGEMENT (Illustrated) .....	A. W. Preston 95
FARM SHOPWORK .....	E. W. Lehmann 103
EDITORIAL REVIEW FOR THE MONTH .....	105
The Presidential Candidates on Education—An Increase in Child Labor—On the Administration of the Smith-Hughes Law—A Better Cities Contest in Oklahoma—Professor McKinney Becomes a Director of Correspondence School Work—S. J. Vaughn goes to University of Illinois—Grammar Grade Machine-Shop Work in Detroit—A Personnel Institute—A Society for Foreman Training.	
A POINT OF VIEW—Education Table d'Hôte .....	Arthur Dean 112
WASHINGTON CORRESPONDENCE .....	114
Analysis of Government Expenditures—Manual Arts for Rural School.	
IN FOREIGN COUNTRIES .....	117
A School for Apprentices in a French Automobile Factory—The German National Conference on Education.	
PROJECTS, PROBLEMS AND NOTES .....	119
Woodwork Design—Shelving—Fly Traps—Plant Stands—Sheet-metal Problems—An Equipment for Teaching Electrical Work—A Wood-turning Chuck.	
CURRENT PUBLICATIONS .....	128
Field Notes—Personal Items—Trade Notes—Book Notes.	

## ANNOUNCEMENTS

The November number will give considerable emphasis to toys suitable for pre-holiday problems. In an early number Supervisor J. H. Tryborn will give in detail how he is applying the project method of teaching in the public schools of Detroit.

In October, 1919, we published a valuable collection of drawings of historic tables in an article by Frederick J. Bryant, entitled "Furniture Fashions of Long Ago." We have another equally interesting article from Mr. Bryant giving more tables and some chairs.

*This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.*

Entered at the Post Office at Peoria as Second-Class Matter. Copyright, 1920, The Manual Arts Press.

## FIELD NOTES

### ANNUAL CONVENTION OF TEACHERS OF PRINTING

THE fifth annual convention of the Eastern Section, International Association of Printing Teachers, was held on July 6, 7, 1920, at Ocean City, N. J. Almost a hundred delegates were present, and the program, tho not long, was interesting and instructive.

Owing to a misunderstanding regarding the dates of the convention, the speakers, Dr. F. W. Hamilton, educational director of the United Typothetae of America, and Major A Gibson, War Department, Plans Division, Washington, D. C., did not arrive until evening of the opening day.

Tho the opening speakers were not present on Tuesday morning, the delegates were, and Fred. A. Braun, teacher of printing in the McKinley School, Newark, N. J., rushed into the breach, and gave a very interesting and highly instructive talk on the "Commercial Value of Linoleum Block Printing." Mr. Braun explained all the details of the process from the drawing of the design to the cutting and printing from the blocks. He demonstrated how the key-plates were made and how the color-blocks were prepared. He had many excellent examples of his own work, showing the wonderful opportunities for art expression in this phase of printing. His audience was intensely interested, both in his description of the process and in the process itself. Many of them will doubtless be practicing linoleum block printing this fall. The Association would do well to have more of these technical talks on timely topics. Those who failed to attend the convention missed a wonderful opportunity to add to their technical knowledge and skill.

On Tuesday afternoon the delegates and their friends made up a yachting party and went for a sail. Most of them were under the impression that they were to sail on the bay, but Capt. Risley headed right out on the broad Atlantic. The weather was ideal and there was just enough sea-way on to make the trip delightful. As no one got seasick, it was evident that the printers were all good sailors, evidently due to many rough voyages on the sea of life.

On Wednesday morning, President Burns called the meeting to order, and in a few, well-chosen words introduced James M. Stevens, principal of the Ocean City High School. Mr. Stevens responded by welcoming the delegates to Ocean City, and hoped they would come often and stay longer. Mr. Stevens expressed his appreciation of well-printed books, and spoke of the opportunity for

excellent work possessed by teachers of printing in public schools.

Dr. F. W. Hamilton, educational director, United Typothetae of America, was then introduced. His topic was: "Training and Educating Apprentices." Dr. Hamilton gave a résumé of the work of the Educational Committee of the United Typothetae of America in training apprentices. After debating on the various functions of the United Typothetae, he stated that the most important of all was the training of apprentices. Every student of the apprenticeship question must view with alarm the present status of affairs. During the war, young men were concerned more with the acquisition of the immediate dollar than they were with learning a trade. This condition is gradually changing, altho there is still a dearth of good material for making well-rounded workmen. It was highly gratifying to the teachers to hear Dr. Hamilton say that the Apprenticeship Committee of the National Typothetae stands ready to cooperate with any school or organization in training printers' apprentices. There was a time when the Committee did not look favorably upon the teaching of printing in the public schools. This Committee has prepared a pamphlet entitled "Printing in the Public Schools." Every teacher of printing should secure a copy. At the same time ask for a copy of the "Teachers Manual," shortly to be issued by the Committee, which will give an outline for a two-year course on half-time arrangement.

Major A. Gibson, of the Department of Vocational Training, U. S. A., was the next speaker. He gave an interesting talk on "The Aims and Scope of the Vocational Training Plan in the United States Army." He spoke of the wonderful changes that have taken place regarding war and preparedness for war that resulted from the recent conflict of nations. It has been demonstrated that the safety of a nation is an adequate school system. He said that the school system is doing more for preparedness than is the military system. If we make everyone a good citizen, all else will follow. We must train for a moral sense. Not only education, but moral education is absolutely essential. It was formerly considered that the nation that had the strongest military organization was the best equipped to win a war. It is now conceded that a nation must be highly organized industrially to be successful in war. Fifty per cent of military-trained men must be mechanics. In order to supply the need for properly trained military men for the army, and also to train military men to fit into civilian life after leaving the army, the





## National at the Industrial Works

ONE ship loaded on its way every ten minutes was the record that Industrial Cranes made possible during the peak period of war activity.

Traced on National Cloth and built by the Industrial Works, Bay City, Michigan, these cranes are known wherever ships are loaded and construction work done.

That this company, the acknowledged leader in its line, should trace its designs on National is but the result of its own experience, as is the case of many of the larger American concerns using National Cloth

We want you to determine through *your own experience*, of the superior transparency, uniform surface, exceptional erasing qualities, the elimination of the need of pounce or powder, the ability to take either ink or pencil marks satisfactorily, and of the great wearing and non-cracking qualities.

Just request a sample sheet of sufficient size for actual use and compare it in every way with the cloth you are now using and you will find that National Cloth is a very different and superior cloth. Remember every yard backed by our guarantee.

### NATIONAL TRACING CLOTH CO.

SAYLESVILLE, RHODE ISLAND

NEW YORK OFFICE

72 LEONARD STREET

#### OTHER PRODUCTS

National Vellum Cloth  
National Blueprint Cloth

National Tracing Paper  
National White Pencil Cloth

107-16



# National

## TRACING CLOTH



## FIELD NOTES—(Continued)

United States Government has inaugurated an extensive plan for vocational training. The army is to be increased in size until it numbers 300,000 men. These men are to be educated and taught trades. At the present time the program embraces 119 vocations. Printing is one of them. The printing course is not fully matured, however, but is being gradually developed. The army needs teachers of printing. Those who feel that they would like to take part in this work should communicate with Major A. Gibson, Department of Vocational Training, Washington, D. C.

After listening to Major Gibson's remarks the delegates doubtless all felt a just pride in proving that they are doing their bits towards conserving a safe and sane democracy.

At the business meeting held on Wednesday afternoon, a change in the plan of electing officers was decided upon. Heretofore officers have been elected by the delegates in convention assembled, but the new plan calls for the nomination of officers by the convention and their election by a referendum of paid-up members.

The following nominations were made and ballots containing their names will be sent to all paid-up members:

### President—

George P. Perry, Hampton, Va.  
Chas. Neville Walker, Detroit, Mich.

### Vice-President—

Daniel S. Bonner, Cincinnati, Ohio.

### Secretary—

Dean W. Conner, Erie, Pa.  
David Daniels, Newark, N. J.

### Treasurer—

Neils Hanson, Perth Amboy, N. J.  
Frank Baker, Montclair, N. J.

### Executive Committee—

James Coughlin, New York, N. Y.  
Frank S. Henry, Philadelphia, Pa.  
James Gaffney, Atlantic City, N. J.  
John A. Hough, Chicago, Illinois.  
Michael Greengrass, Paterson, N. J.

### Sergeant-at-Arms—

Charles Temple, Paterson, N. J.

This year the officers of the Association tried the experiment of holding the convention during the summer vacation, hoping thereby to have a greater attendance. The attendance exceeded the expectation and the officers were delighted with the large number who found it convenient to attend.

WRITE to L. W. Wahlstrom, 1711 Estes Ave., Chicago, for a copy of the September bulletin of the Vocational Education Association of the Middle West.

## NEW FEDERAL BOARD OFFICE IN CHICAGO

THE District Office of the Federal Board for Vocational Education located in Chicago covering the states of Wisconsin, Michigan and Illinois, has recently moved into larger quarters in the Leiter Stores Building. The eighth floor of that building which was formerly the Seigel Cooper Department Store, is given over entirely to the organizations handling the problem of the disabled soldier. On this one floor are now located the Bureau of War Risk Insurance, the U. S. Public Health Service and the Federal Board for Vocational Education. The Federal Board has approximately 16,800 square feet. This provides much needed room and will permit the staff to handle the work in much better shape.

In addition to this change, local offices have been established thruout the three states with a view to further decentralizing the work of the Board. All energies are now being concentrated on clearing up as many applications for training as possible before the opening of schools in the fall.

With a view to expediting work, squads have been organized to visit various parts of the district and personally investigate and complete claims for training. This work is meeting with considerable success, bringing direct action on cases which have been difficult to complete in the routine manner. In this connection, the Red Cross and American Legion have proven a considerable help in locating men who have been in need of rehabilitation.

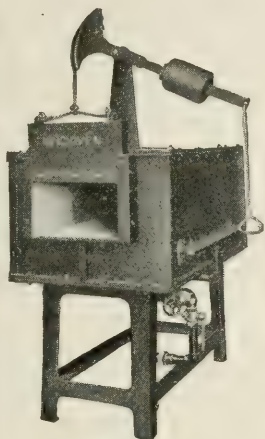
The address of the new office is 14 East Congress Street. Any of our readers who wish to communicate with the Federal Board regarding disabled ex-service men in need of rehabilitation in the states mentioned above, should communicate with the District Vocational Officer, Chas. W. Sylvester, at this address.

## AROUND NEW YORK

THE New York City Board of Education opened its elaborate system of evening trade instruction Sept. 13th. Training is given in almost every known calling; nursing, baking, auto repairing, textile design, manicuring, machine shop work are only a few of the courses authorized, but they indicate the range of subjects covered.

Only such students will be admitted as are not in attendance at any day school and who are employed during the day in the trade they wish to study. The instruction is designed to be supplementary to daytime occupations. Most courses will be limited to two evenings a week. In certain cases extra instruction will be permitted.

# Accurate, Result-Getting Furnaces That Have Proved Their Ability



**STEWART No. 10  
OVEN FURNACE**

**For Heat Treating, Annealing and Carbonizing**

Opening, 12"x20"  
Depth, 48"  
Floor space, 42"x66"  
Gas and air connections, 1 1/2"  
Shipping weight, 3900 lbs.  
For gas or oil fuel.



**STEWART ROD END  
FORGE**

**For Light Forging, Tool  
Dressing, Rod End  
Heating, Etc.**

Opening, 2"x10", giving spot  
heat of 8"  
Floor space, 24"x24"  
Gas and air connections, 1 1/4"  
Shipping weight, 430 lbs.  
For gas fuel only.

Stewart Furnaces are backed by a record of years of thorough, satisfactory performance for manufacturers and tool makers all over the United States and Canada.

Stewarts have come up against many extremely difficult heat-treating requirements, and have satisfied in every instance. They produce results, they are scientifically constructed and are thoroughly in line with modern shop practice.

Manufacturers using Stewarts do not deal with uncertainties—they *know* that Stewart Furnaces guarantee high quality tools, dies, gears, machine parts, etc. They also know that these high quality results are obtained at a considerable saving in time, fuel and material.

Many a manufacturer and tool-maker has built a reputation for high quality products because Stewart Furnaces have *guaranteed* his heat-treating operations.

Heat-treating furnaces that satisfy particular manufacturers are excellent equipment for schools teaching the metal trades. Stewarts are thorough—accurate—economical.

*Our furnace engineers gladly give you  
the benefit of their counsel  
and experience*

## Chicago Flexible Shaft Company

1128 South Central Ave., Chicago

350 Broadway  
New York

Railway Exch. Bldg.  
St. Louis





# STANLEY HANDLED HAMMERS

The heads are made of special steel, carefully forged, hardened and tempered.

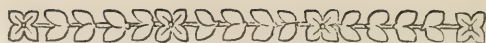
The handles of selected second growth white hickory.

The improved method of fastening the heads to the handles makes it practically impossible for the head to fly off.

The No. 12—10 ounce is especially designed for Manual Training use.

We would welcome an opportunity to tell you more about this exceptional line of Hammers.

**THE STANLEY RULE & LEVEL PLANT.**  
THE STANLEY WORKS  
**NEW BRITAIN, CONN. U.S.A.**



## FIELD NOTES—(Continued)

Not all subjects are taught in every school. A student wishing to know where he may take a certain course may apply to any trade school for the information or write to the director of evening schools, 500 Park avenue.

Should there be a sufficient number of candidates for any course not now arranged for, a class will be organized.

The salaries of the instructors have been increased 30%, from \$5.00 per session to \$6.50, and the principal's salary from \$7.00 to 9.10 per session.

THE COMMITTEE on education of the New York State Federation of Labor made its report at the convention of the Federation, held recently at Binghamton. They made the following recommendations:

1. Repeal of the Rockefeller Foundation Charter.
2. That the state legislature be asked to make more generous allowances for cities and towns. Larger appropriations for Americanization work among the illiterate foreign element.
3. That elaborate graduation and commencement exercises be eliminated, to the end that the child may not be given the impression "that his education is finished."
4. Co-operation is desired between the unions of the state and employers for the education of apprentices, and stress is laid upon the necessity of opposing any proposals to shorten the apprenticeship period, this on the theory that the state needs finished mechanics rather than "half baked artisans."
5. Legislation to compel state local authorities to provide dental, medical, optical, and surgical treatment and care for all school children.
6. That there shall be established in connection with every school a system of furnishing school lunches at nominal cost for the purpose of demonstrating food values.
7. More free scholarships by the state for graduates of public schools.
8. Establishment of state and city supervised and supported vacation camps for all public school children.
9. A state law making compulsory election of all members of boards of education.
10. That representatives of the workers be appointed as members of the New York State Board of Regents.
11. Public forums to be established in every school under the direction of Boards of Education.
12. That the establishment of all-year schools be given careful consideration by the State Department of Education and all local communities.

FIELD NOTES—(Continued)

13. That steps be taken to regulate and control the so-called business school or college and alleged trade schools, many of which are doing an irreparable damage to business and industry thru failure or inability to provide teaching and practice which meet the up-to-date requirements of industrial and commercial life. All of these schools should be licensed by the Regents.

A NEW CONTINUATION SCHOOL will be opened in Long Island City by the Board of Education, in September for the benefit of the working boys and girls in Queens who are still within the compulsory school age.

All boys and girls under seventeen years of age, who are employed in any line of work, must attend one session of four hours, per week. An employment bureau will be maintained in the school for the use of both employers and pupils.

In the commercial department the following subjects will be taught: business arithmetic, office practice, filing, business methods, typewriting and telephone switch-board operation. The academic subjects will include: reading, business letter-writing, arithmetic, spelling, speech improvement, industrial history, American history and civics, personal cleanliness, laws of health and economics.

Special training will also be offered. Boys will have an opportunity of taking courses in carpentry, cabinet making, furniture finishing, general wood-working, machine shop practice, electric installations, pipe cutting, mechanical trade, and architectural drawing, blueprint reading, and printing.

Girls will be taught sewing and dressmaking, millinery, flower making, novelty work, trade drawing applied to women's apparel, home-making, cooking, laundering, house budgets and purchasing.

—W. H. DOOLEY

VOCATIONAL EDUCATION ASSOCIATION  
OF THE MIDDLE WEST

THE following has been received from L. W. Wahlstrom, 1711 Estes Ave., Chicago, secretary of the Vocational Education Association of the Middle West:—

The seventh annual convention of the Vocational Education Association of the Middle West will be held on February 10, 11, 12, 1921, in Minneapolis. Headquarters have already been obtained in the Curtis Hotel where excellent accommodations for the various exhibits, as well as ample room for the sessions of the association, will be assured.

This is the first time that this association has met outside of Chicago. The Board of Directors,



Speed!

Maximum tension—maximum strain.

That belt joint must H-O-L-D.

It will hold—it's a Crescent!

And it must combine lightness with its sturdy strength.

It does—it's a Crescent.

For light high-speed work—just as for heavy work—Crescent Belt Fasteners meet every vital requirement.

Use them on every belt in your shop.

Teach your students to make belt joints that H-O-L-D with Crescent Belt Fasteners.

Crescent Belt Fasteners are consistently light for the work they have to do, reducing strain to a minimum. Yet strong as necessary, with a good margin to spare. They effect a joint that's permanent for the life of the belt—a joint that does not have to be repeatedly remade.

No part of the belting is cut or punched away in making a Crescent Joint. The belt's full strength is sustained and made endless for all practical purposes on the pulley side; it hugs the pulleys perfectly, insuring full power transmission.

Write for new Booklet Q on Increasing Belting Efficiency.

Crescent Belt Fastener Co.

381 Fourth Ave., New York

Crescent Belt Fastener Co., Canadian

32 Front St., West, Toronto, Canada

**CRESCENT**  
Make Good Belts Give Better Service  
**BELT FASTENERS**

## How would you sharpen a spiral milling cutter?

Page 19 in our No. 7 Catalog describe how  
simply it is done on a



## Universal Grinder

In this book the machine is illustrated,  
set up for twenty-three different jobs of  
grinding.

It will sharpen properly all kinds of  
shapes of milling cutters also counterbores,  
reamers and other machine shop tools. In  
addition it will do accurate jobs of surface,  
internal and cylindrical grinding.

We will mail a copy of this catalog to  
any instructor for the asking.

**Greenfield Machine Co.**  
Greenfield, Mass., U. S. A.

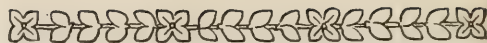
## MONITE Waterproof Glue

**T**HIS modern adhesive should be found  
in every school. CASEIN glue is  
endorsed by the Forest Products Laboratory  
and is recognized as the coming glue for  
every woodworking and pattern making  
use. Every student should know that it is  
possible to prepare with cold water a glue  
that produces a joint which is water and  
heat proof, and yet has as great strength as  
the hot glues, without their disadvantages.

We have prepared a booklet for distri-  
bution that gives valuable information  
about the properties, uses and application  
of CASEIN glues. A request will bring  
it to you—with a generous working sample,  
if you wish.

**Casein Glue  
Manufacturing Co.**

**136 West Lake Street  
Chicago, Ill.**



### FIELD NOTES—(Continued)

in making this move this year, were prompted by  
several factors, among which might be mentioned  
the following:

1. The generous and hearty invitation from the  
educational and civic interests of Minnesota and  
the Northwest.

2. The request from various sources that the  
Association meet outside of Chicago, and thereby  
establish its right to the use of the term "Middle  
West."

3. The opportunity afforded by a meeting in  
Minneapolis to study at close range excellent work  
now in progress in vocational lines. It is believed  
that this opportunity will be eagerly grasped by  
everyone interested in vocational education.

Believing that attendance upon a convention  
such as this Association holds is of vital interest  
and value to every community engaged in furthering  
education, the executive committee plans inaugurat-  
ing a campaign looking forward to placing the ex-  
pense of a delegate at this meeting on each and every  
community rather than a tax on the individual  
teacher.

The president of the Association this year is Pro-  
fessor Edwin A. Lee of Indiana University.

### IN CALIFORNIA

**I**N LOS ANGELES, if the Board of Education,  
the Chamber of Commerce and the master  
painters all have their way, the devil will find, hence-  
forth, few idle hands to do his work. In this in-  
stance, the devil is construed as unrest, said now  
by many thoughtful to be a national distemper—  
a by-product of the late Great War, like the "flu,"  
perhaps.

Instead of theorizing, the three organized agencies  
of endeavor were simultaneously smitten with the  
common-sense idea that thus far in the world's  
history, a full pocketbook has proven the most  
effective antidote for unrest. So, to cripple the  
Bolshevist germ before it became dangerous to the  
youth of Los Angeles, the three wise factors decided  
to go in for vocational education with a vengeance  
—or, by a more happy simile, with real money and  
plenty of it. Helping toward this conclusion was  
the fact of the unprecedented building-trades  
activity thruout Southern California, with houses at  
a high premium everywhere.

The immediate result has been the establishment  
of a course in house-painting.

For some time to come, a school of house-painting  
will be conducted in the evening. The teachers  
will be practical house painters, working under the  
direct supervision of a committee from the Master





## *Finish It Well*

THE finishing of manual training models is assuming more and more importance every year. Surely it is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

### JOHNSON'S ARTISTIC WOOD FINISHES

Johnson's Artistic Wood Finishes are now being used in nine-tenths of the schools in the Country. They are particularly adapted for manual training work as they may be applied by the youngest and most inexperienced pupils with the best results.

The Johnson Wood Finishes most popular among Manual Training Instructors and Pupils are *Johnson's Wood Dye*, *Prepared Wax*, *Under-Lac*, *Paste Wood Filler*, *Flat Varnish*, *PerfectTone Under-Coat* and *PerfectTone Enamel*. We have a very attractive exhibit of wood panels finished with these products which we are glad to send Manual Training Instructors who will give it wall space in their shop. Write for it.

#### *Beautiful Instruction Book Free*

Our beautiful new thirty-two page colored booklet "The Proper Treatment for Floors, Woodwork and Furniture" is just off the press. It is full of valuable information for Manual Training Instructors and Pupils. Do not hesitate to write for it. We will gladly furnish it free upon request.

**S. C. JOHNSON & SON, Racine, Wis.**

"The Wood Finishing Authorities"  
Canadian Factory—Brantford





*Birmingham High School,  
Birmingham, Ala.*

## Forge Shop Equipment

We are now offering everything necessary to equip the forge room complete, and typical layouts with photographs of installations will enable the proposed user to determine the number of forges possible to install in any space available.

Our Engineering Department is ready to give you any information on supplying blast and removing smoke and gases.

*Write for catalog 205-31.*

**Buffalo Forge Company**

BUFFALO, N. Y.

*"Buffalo"*



### FIELD NOTES—(Continued)

Painters' Association of the city. They will see to it that the students are taught how to meet the practical requirements of the trade, so that as soon as they complete the course, they will be qualified to go to work on jobs anywhere. And the Board of Education figures that the youth who comes home after an eight-hour day of labor with ten dollars as his reward will not be permeated easily with the idea that millionaires are natural enemies and never-do-well born friends.

The men who have been delegated to make this new course a success—are W. S. Keinholz, and Vierling Kersey, representing the public schools; Horace Mann, Albert Mason and R. V. Germain, representing the master painters; and the manufacturing committee of the Chamber of Commerce.

Another Southern California educational innovation, typical of the tendency to train in lines of local demand, is seen at Fullerton, Orange County, where the boys of the high school are to be educated as oil experts. Fullerton is the center of a famous oil-producing region, with forests of derricks dotting the landscape in all directions.

It was by a naturally-to-be-expected course of reasoning, therefore, that the trustees of the high school there decided that the rising generation should be trained to know how to make the most of the wealth given the community by Mother Nature, and how to conserve it.

Garland M. Hunter has been engaged as instructor in the oil industries course, which now is a regular part of the school's curriculum. So novel was the idea of the trustees, seemingly, that when it was decided to teach the Fullerton young idea to "shoot" an oil well properly, no one except an engaged well superintendent could be found as instructor. However, California State University agencies were told of the dilemma and with the result that Mr. Hunter was found just in time, as he was about to accept a position with an oil company. The Fullerton oil industries course will be of four years, and this will include thorough instruction in a multitude of subjects pertaining to the gigantic petroleum-production industry.

—JAMES F. TAGGART

THE ILLINOIS STATE BOARD FOR VOCATIONAL EDUCATION has recently issued a statement showing the number of cities, the type of work, the amount of reimbursement and the number of pupils and teachers in industrial schools and classes working under its supervision. Two cities, Chicago and Rockford, have all-day trade schools; 3 cities, Chicago, Moline and Rockford have part-time

# Manual Training Magazine

OCTOBER, 1920

THE VOCATIONAL SCHOOLS OF BUFFALO

HUNTING HIGH POINTS—IV

CHARLES A. BENNETT

WHILE other cities have been debating what kind of a vocational school system to establish, or avoiding the issue altogether, the city of Buffalo has made a success of all-day vocational schools. About 800 students are now enrolled in these schools, learning the trades of automobile mechanics, cabinet making, carpentry, electrical construction, machine shop practice, pattern making, printing and sheet-metal work. The success of the schools has been the result of so much pioneer effort, study and experiment, and the results seem to be so conclusive that supervisors in other cities ought to profit by the experiences of Supervisor Francis H. Wing who made effective this type of school in Buffalo.

With this thought in mind I spent two days in Buffalo last winter visiting schools and trying to get the viewpoint of Mr. Wing and his teachers, and to gather facts as far as they may be gathered by a visitor in a brief survey of the schools as they appear in operation.

It seems to be clear that the commercial and industrial ambition of Buffalo has been an important factor in the decision to develop in that city an effective scheme of vocational education. To realize its ambitions as a city, Buffalo must have the best educational system for industrial workers and she has been willing to support a program that would provide such a system. Consequently when the State of New York passed a law in 1908 providing for state aid for "intermediate industrial schools" Buffalo was ready to

take advantage of it. In the following September the Seneca Vocational School was established. The next September, 1910, the Black Rock Vocational School and the Elm Vocational School were opened, and in 1911 the Peckham Vocational school. As a matter of fact, these schools were not strictly of intermediate grade, but were used at first as a "scrap heap" for unsatisfactory boy material by all the other public schools of the city. As every industrial supervisor knows, this has been a common initial experience in most cities, but not every city has used this condition so effectively in gradually developing from it a high type of educational work and a rational standard of admission. Concerning this condition of things at the opening of these schools, Mr. Wing has said, "The evolution from this state to that of a bona fide 7th and 8th grade proposition took several years, and the clarifying of aims took even longer."

With many mixed and conflicting ideals to retard progress, there was nothing that helped so much to untangle the difficulties as the decision that the fundamental aim of these schools was to train all-round, skilled mechanics. If boys left these schools with only a little corner of a trade and became machine operators, and if they were effective operators because of their training in these schools, that kind of preparation was not to be put forward as the aim of these schools.

When these schools were established there was no thought of part-time education in Buffalo. For that reason the



scheme was neither side-tracked nor retarded by such discussion as we sometimes witness today. It is now considered that these schools do not conflict in any undesirable way with such part-time work as may be developed in the city in the future.

With the aim clarified; namely, to train skilled mechanics who are good citizens, the road to success was straight ahead. To quote Mr. Wing

boys to be given the opportunity of taking trade school courses.

Furthermore, there are certain sections of our population in which advancement in the grades is not at the normal rate. This is particularly true of our citizens of Polish descent. Among these people a very large percentage of the normal boys do not get farther than the 7th or 8th grade before their fourteenth birthday. Therefore, the 7th and 8th grade fourteen-year-old in the Polish districts of the City does not represent the mental scum. Consequently we have no objection to providing the opportunity to these students to prepare for the



MACHINE SHOP, SENECA VOCATIONAL SCHOOL, BUFFALO, N. Y.

It made the program of these schools very specific and gave an ideal which we could use as a standard both in the selection of raw material for our schools and in provisions for training of this raw material. This decision caused us to overhaul thoroly the qualifications of the fourteen-year-old boy who had advanced only as far as the 7th or 8th grade. We did this to determine whether this individual was in the main the proper material from which to make our finished product—the highly skilled, all-round mechanic. From this study we have come to believe this source of material is questionable. No doubt there are occasional boys of this class who are eminently fitted for the vocation of the highly skilled mechanics and we have made provision for such

vocation of the skilled mechanic without requiring them to have completed the 8th grade. The apparent retardation of this class of boys is owing to the language difficulty of boys who use English only in school and to the lower standards of efficiency obtaining in Polish parochial schools as compared with the public schools, altho the latter in these neighborhoods are pulled down in their standards because of a constant interchange of pupils between the public and the parochial schools.

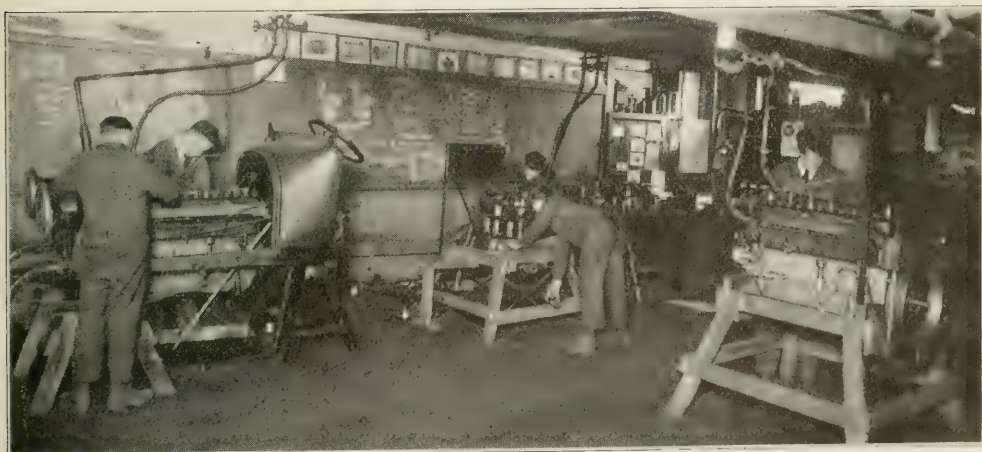
With the above general exception we find that the boy who has not completed the 8th grade by the time he is fourteen is not good material for our purposes. Therefore the schools which draw largely from the more thoroly assimilated American

population admit on condition only, students who have not completed the 8th grade. Moreover, such students must demonstrate within a reasonable time (about one term) that they possess the qualifications required for success in the vocation for which we are training.

lines to secure trade school education on the basis of their ability to pursue the course satisfactorily. On the whole, however, experience has taught us that the average 8th grade graduate, who at his graduation was about 14 years old, is none too advanced properly to pursue trade school training.



PATTERN-MAKING SHOP, BLACK ROCK VOCATIONAL SCHOOL, BUFFALO, N. Y.



TESTING ROOM, AUTO MECHANICS DEPT., ELM VOCATIONAL SCHOOL, BUFFALO, N. Y.

Boys who are not graduates of the elementary school must have completed not less than the 6th grade and must be at least 14 years of age, and what is far more important, must be able to perform the work required of 1st and 2nd year high school students. This exception leaves open the way for boys of exceptional ability along trade

Thruout this building-up process from the school standpoint the vocational schools of Buffalo have had the cooperation of the industrial interests of the city—of both the manufacturer and the laborer; but the school organization has

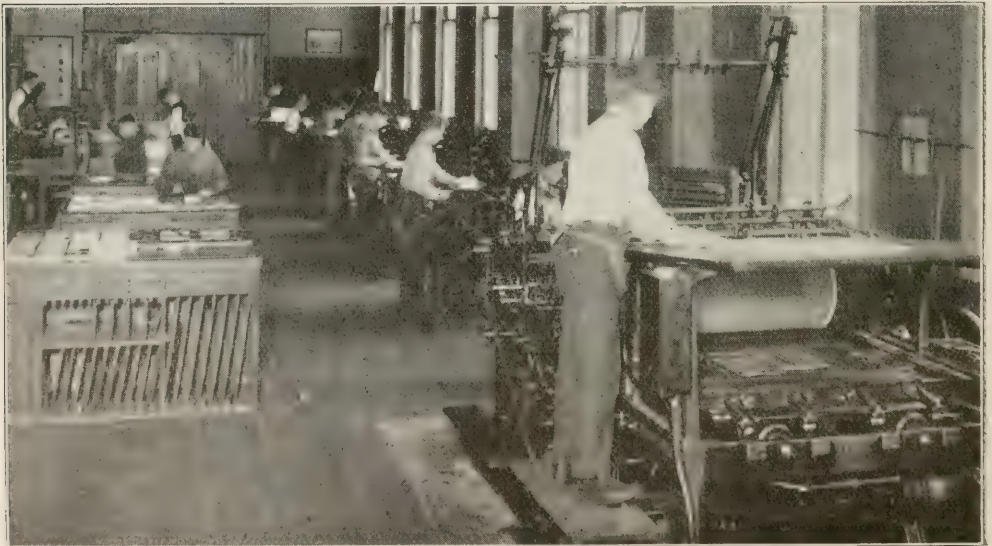


kept the initiative. The supervisor has not allowed himself to be blown about by every breeze of new doctrine or every squall of industrial need. As is perfectly evident, he has kept to the straight road, preparing boys to become skilled, all-round mechanics, and has selected his instructors accordingly. In this selection and development of his teaching staff and in his inspiring them and holding them because of the bigness and difficulties of the task, is the second secret of the success of the Buffalo vocational schools.

It is unnecessary for the present purpose to outline the courses in these schools. These are set forth very attractively in a pamphlet entitled "Vocational Education for the Industries." It remains merely to point out that, while Buffalo is a city with very great possibilities for industrial development, and consequently must have a thoroly efficient system of industrial education, it

is by no means the only city that aspires to such distinction and needs such a school system. Other cities will do well to notice that the success of the all-day vocational school in Buffalo has been due to

1. A definite aim—the education of all-round skilled mechanics.
2. Outlining the courses to fit that aim.
3. Employing teachers capable of giving instruction in accord with the aim.
4. Selecting pupils with a leaning toward industry and with capacity to profit by the instruction given.
5. Cooperation with the local industries—with both employers and employees.
6. Team work on the part of the teaching and supervisory staff. And, Mr. Wing would doubtless add,
7. "The persistent use of effective publicity."



PRESS ROOM, PRINTING DEPT., ELM VOCATIONAL SCHOOL, BUFFALO, N. Y.



A NEW METHOD OF EDUCATIONAL WORK SHOP MANAGEMENT

A. W. PRESTON

Instructor in Engineering, University of Nevada, Reno, Nevada

THE object of shop courses in educational institutions at the present time is, in general, two-fold; first, to acquaint the student with the fundamentals of the various operations of construction, devoting as little time as possible to detail, since the time allotted to this work prohibits the training of finished mechanics; and second, to familiarize the student with modern commercial shop systems and practice. Of the two, the latter is perhaps the more important, yet this phase of the work is given very little attention under the methods now in use.

This article briefly outlines a method by which both of these objects are accomplished. The first object is better accomplished by the new method, since the student does a third more work and therefore covers more ground.

The second object is accomplished by having the student perform all of his shop work under a system very similar to those now in use in modern commercial shops. The student becomes thoroly familiar with a shop system whereby the labor costs of each manufactured piece is readily determined, and he will be able to introduce such a system in any shop with which he may become connected.

The competition at the present time is such that all successful commercial shops must be scientifically conducted, and therefore the student should be made familiar with modern shop practice if he hopes to become a successful manager.

The cost for extra equipment required by this system is not large. In general, an outlay of about \$300.00 is needed. This amount is small in comparison with the benefits derived, and the extra saving in material and tools which results soon exceed the cost of equipment.

STUDENT'S PROCEDURE

In registering, a student is considered to be in the employ of the instructor for the semester at a specified rate with the understanding that he may get a bonus thru discipline, speed and excellency in

UNIVERSITY OF NEVADA  
MECH. ENGINEERING DEPT.  
TIME CARD  
7 Week Ending OCT 21 1915 19  
No 32  
NAME James W. S.  
2000 points = time and completed jobs required per Semester Hour.

DAY	MORNING		AFTERNOON		DEPARTMENT NUMBER	HOURS TOTAL
	IN	OUT	IN	OUT		
M					M. E.	
T					M. E.	2
W					M. E.	
T					M. E.	2
F					M. E.	
S					M. E.	4
S					M. E.	

TOTAL TIME			REMARKS
M. E.	Pts	Pts	
M. E.	2	125	
M. E.			
M. E.			
M. E.	4	100	
M. E.			

FIG. 1

his work. He is then assigned a shop number.

Each day on entering the shop he registers his time by means of a recording clock on a weekly time-card bearing his number, Fig. 1. These cards are filed in card racks to the right and left of the clock, Fig. 2.

As long as he remains in the shop, his card is filed under his number in the rack



FIG 2

marked "IN;" at all other times his card must be filed under his number in the rack marked "OUT." He therefore transfers his card to this rack when leaving the shop. As is common in commercial shop practice, the clock and filing racks are placed conveniently near the shop entrance.

When the student has recorded his time and filed his time-card properly in

the "IN" rack, he proceeds to the route clerk and calls his number. He is then assigned a job and given an identification form, a requisition form for a standard allowance of material, and blue-prints showing the details of the work to be done. He then proceeds to the shop foreman with whom he discusses the blue-print. When it is evident that the student understands all the details of

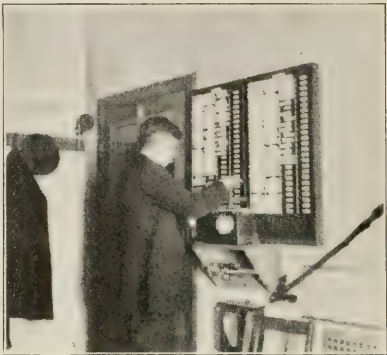


FIG. 4

the blue-print, the shop foreman signs the requisition for material. The student then obtains from the stock clerk the allowance of materials called for on the requisition form, and proceeds to the

MAN'S No.		<b>UNIVERSITY OF NEVADA</b> ENGINEERING DEPARTMENT This is your requisition for extra allowance of material Present it to the Stock Clerk		ORDER  No. _____	
PIECES	SIZE	DESCRIPTION OF MATERIAL	WEIGHT	COST	
DEPARTMENT No. _____		EXERCISE No. _____		SUPERINTENDENT OF SHOPS _____	
Date _____					

FIG. 3.

STUDENTS Shop No. <b>32</b>	EXERCISE No. <b>7</b>	ORDER No. <b>2503</b>	STUDENTS SHOP No. <b>32</b>	EXERCISE No. <b>7</b>	ORDER No. <b>2503</b>
-----------------------------------	-----------------------------	-----------------------------	-----------------------------------	-----------------------------	-----------------------------

UNIVERSITY OF NEVADA ENGINEERING DEPARTMENT		No. <b>2</b>
<b>JOB TICKET</b>		
<i>Lap. Weld.</i>		
CLOCK TIME RECORD	TIME PER DAY	
On <b>SEP 20 1944</b> <b>3:00 PM</b>	<b>20</b>	
Off <b>SEP 20</b> <b>3:20 PM</b>		
On <b>SEP 22 1944</b> <b>1:10 PM</b>	<b>2:10</b>	
Off <b>SEP 22 1944</b> <b>3:20 PM</b>		
On <b>SEP 27 1944</b> <b>1:10 PM</b>	<b>1:20</b>	
Off <b>SEP 27 1944</b> <b>2:30 PM</b>		
On		
Off		
On		
Off		
On		
Off		
On		
Off		
On		
Off		
On		
Off		
STUDENTS NAME <i>Jones W.L.</i>		Total Time. <b>3:50</b>

STUDENTS IDENTIFICATION CARD STUDENTS INSTRUCTIONS		
Keep this card in the JOB CARD RACK until work is completed, then return it with the finished piece of work to the SHOP CLERK.		
Students time is valued at twenty five points for each hour. Forty clock hours equal one semester hour or one thousand points.		
Each job has a time limit called STANDARD TIME, being rated on a basis of twenty five points an hour. Time gained is added to the standard time and time lost is subtracted.		
A total of 2000 points for each semester hour, or credit, is required for 100% grade. 1000 points for attendance and 1000 for work.		
Work which is accepted will be graded as FIRST OR SECOND CLASS in the space designated below. 25% deducted for second class work.		
Students will be held responsible for failure to read notices of detailed instructions and for failure to comply with shop rules.		
To earn a premium, hours worked on a job must not exceed STANDARD TIME indicated below.		
HOURS <b>4 Hrs</b>	MINUTES <b>—</b>	POINTS <b>100</b>
Time required by STUDENT. <b>3:30</b> — <b>96</b>		
Time gained by STUDENT. <b>10</b> — <b>4</b>		
Time lost by STUDENT.		
Points earned by STUDENT. <b>104</b>		
Your work has been graded by INSPECTOR as ————		FIRST CLASS    SECOND CLASS
Cost of material for this work is —		
For all extra material used for this job, indicate below.		
① ② ③ ④ ⑤	Total cost	

A

FIG. 5

B

shop where he begins his work. If the material is spoiled during the work, or proves defective, the shop foreman fills out a special requisition form, Figure 3, (printed on yellow paper) which, when presented to the store clerk, enables the student to get extra material.

When the job has been completed, it is presented to the shop foreman who rejects or accepts it, depending on whether the work is satisfactory. If the foreman rejects the work, he makes

out a special requisition form, Figure 3, for extra material, and if he accepts the work he simply writes "O.K." on the identification card, shown in Fig. 5B. Now the student brings this slip and the piece of work to the attention of the shop superintendent who decides on the merits of the work and grades it as first or second class.

The identification card bearing the O.K. of the shop foreman and final grade given by the superintendent is then re-



turned to the route clerk who stamps the time "off" on the job ticket, Fig. 5A. and places the job ticket in the finished-job box, Fig. 4.

The student then takes the identification card and the finished piece of work to the stock clerk who places the finished product in a bin corresponding to the student's number. The student then returns with the identification card to the route clerk who checks the work as finished on his tracer. (The tracer will be explained in detail later).

If because of a breakdown of machinery or for some other reason, a student is obliged to suspend work on his job the shop foreman marks the identification card as suspended. This is then presented to the shop clerk who assigns the student to a new job and places the suspended work in the suspended-job box.

#### DUTIES OF THE ROUTE CLERK

In general, the duties of the route clerk are to give out new jobs, and to keep account of the time spent on finished and unfinished jobs, and to compute each student's earnings. The route clerk is required to have two jobs planned ahead for each student. He makes out these jobs, on a special form job ticket which bears the student's number and the number assigned to the particular job. These job order numbers run consecutively.

The job ticket, a form of which is shown in Figure 5, A and B, is made of two parts which by means of perforations can be separated. The right portion is the identification card and the requisition form. The student receives this when he is assigned a new job. The left hand portion is the job ticket proper. This does not leave the office of the route clerk.

In filling out a job ticket, the clerk simply fills the proper blanks, giving the

man's number, department number, standard time, pieces, size and kind of material, and on the job ticket proper, the man's name and number, the article, the number of the particular blue-print which goes with the job, and the standard time allowed for the job. Fig. 5 shows one of these blanks properly filled out. These forms are then filed under the student's number in the "jobs ahead" rack, Fig. 4. As stated above, there should always be two jobs ahead for each student in order that a new job may be immediately provided in case a job is suspended or finished.

The route clerk's office is provided with the following equipment: two racks similar to time-card racks, one for jobs ahead and one for jobs in operation; a time stamp; a two-compartment box, one compartment for receiving the job tickets for the finished jobs and the other for receiving the job tickets for suspended jobs; and a cabinet for filing the computed finished job tickets.

#### ROUTE CLERK'S PROCEDURE

We have stated how the student goes to the route clerk's office for a job, and calls his number, and we have traced his course through a complete operation. This will now be done with respect to the route clerk. When the student calls his number, the route clerk takes from the "job-ahead" rack one of the two job tickets bearing the student's number, stamps the starting time on the job ticket proper, in the blank space headed "ON". He detaches and gives to the student the identification card and files the job ticket proper in the "jobs-in-operation" rack.

When the student reports that the job is finished, the clerk takes the job ticket from the "jobs-in-operation" rack, stamps the time "off" and deposits the ticket in the "finished-jobs" box, until

SEMESTER		YEAR		TRACER																																																																																																																																																																																																																																																																																																																																																							
SECTION		DEPARTMENT		PLACE JOB TICKET ORDER NUMBER UNDER THE SIGNIFICANT NUMBERS																																																																																																																																																																																																																																																																																																																																																							
COURSE No.		SIGNIFICANT NUMBERS		SPECIAL NOTES																																																																																																																																																																																																																																																																																																																																																							
NAME	AGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																						
ONES, W L	32	32	385	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	7

he has computed the time. The ticket is then filed in the finished-job ticket cabinet. If the job is suspended the operation is the same except that the ticket is then deposited in the "suspended-job" box from which it is later transferred to the "jobs-ahead" rack.

The route clerk keeps a separate form, called the tracer, Fig. 6, which enables him to see at a glance all the work of the class which is completed or which is in operation. This enables him to plan jobs ahead to advantage. The number shown on the tracer is the job ticket order number. This number is located in a space below the number which represents the exercise in operation. A light line thru the order number indicates the job has been started, a diagonal line in the opposite direction indicates the work is completed.

## THE STOCK CLERK'S PROCEDURE

Whenever the stock clerk receives a requisition slip, he supplies the material called for. He also files the finished jobs in bins, Figure 7, keeping all the work for

each student in the bin bearing the student's number. The stock clerk must see that material is kept prepared in advance and in order that he may know at any time the number of students who have completed any particular job and thus know the number who still require material for this work, he keeps a "tracer" of the same form as that kept by the route clerk. This helps him in estimating well in advance the amount of material needed. He also has charge of all tools and issues them on checks.

### METHOD OF GRADING THE STUDENT

*Time Clock Record.* As it has been previously explained, the student understands when he registers in a shop course that he is working for the instructor. We require 40 clock hours of work for each credit. Our laboratory periods are  $2\frac{1}{2}$  hours long, hence 16 periods constitute a semester, giving us 40 clock hours. For convenience we have selected a rate of 25 points per hour as the pay for the student's services; then 40 clock hours multiplied by 25 points per hour

will give us 1000 points for each semester hour or credit. This makes grading very simple.

Assuming that the student has been present every period, it is then only

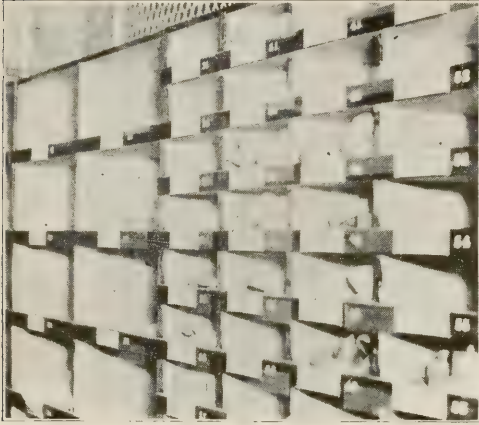


FIG. 7

necessary to point off one place or divide by 10 to get 100% grade for attendance.

Included in the Grading system, we consider the amount of work done and the quality of the same. Each job has a definite time allowance in which to complete it. This is called the *Standard Time*. The standard time has been obtained by taking the average time which a large number of students have required to complete the same piece of work. Sufficient assignments of work are then introduced into the course to fill a semester of 40 hours.

*Record of Completed Work.* If the student completes all of the work within the standard time and each piece is marked first class, then he will earn 1000 points on the work, this being reduced to a grade in the same manner as explained for attendance.

*Record of Extra Material Used.* In case the student requires extra material, or breaks tools (carelessly), the catalog price of these is deducted from the grade at a rate of one point for each cent.

*Discipline.* The rules governing the discipline of the shop are conspicuously posted in each department and the student is notified at the end of each week by means of a slip placed in the rack with his time card of the demerits or points deducted for failure to comply with the shop rules as shown below.:

Over 5 Minutes late.....	25 points
Failure to clean bench or machine.....	25 points
Failure to return tools, each.....	25 points
Failure to punch time card, "in".....	25 points
Failure to punch time card, "out".....	25 points
Failure to insert name on card.....	25 points
Failure to insert department number.....	25 points

*Computing the Final Grade.* In making out the final grade for the student, Fig. 8, the attendance is given by his time card, the points earned on jobs is taken from the job tickets on file, the demerits are taken from the demerit slips, and extra material and broken tools are taken from the foreman's requisitions. All of these items are computed each week and are recorded on the Total Shop Record,



FIG. 8

Fig. 9. This Shop Record devotes one sheet to each student and gives his record for the whole course. In computing the grades, Fig. 9, A and B are added together as credit, C and D are added together as debit, then debit is subtracted from credit leaving the balance



## TOTAL SHOP RECORD

STUDENTS No.

32

NAME

JONES, A. W.

MAJOR SCHOOL

MECH. ENGR.

DATE ENROLLED

SEPT 20, 1919

STUDENT'S BEARING AND CONDUCT

2

DISPOSITION

1

LEADERSHIP

2

FINANCESS

2

DRAFTSMAN ABILITY

2

EXECUTIVE ABILITY

3

RECOMMENDED FOR

SALESMAN

ONE COPY OF THIS FORM IS TO BE FILLED OUT FOR EACH STUDENT AND KEPT ON FILE. PLACE THE POINTS EARNED FOR ATTENDANCE UNDER THE NUMBER CORRESPONDING TO THE SCHOOL WEEKS. PLACE THE POINTS EARNED FOR COMPLETED WORK UNDER THE NUMBER CORRESPONDING TO EXERCISE NUMBER.

DEPT. No.	SEMESTER, YEAR & DAY OF WEEK	SCHOOL WEEKS AND NO OF EXERCISES COMPLETE																									GRADE	
		A																										
		B																										
		C																										
D																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
1 WOOD	M T W T F S	A																										
		B																										
		C																										
		D																										
2 FORGE	M T W T F S	A	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	
		B	106	120	72		104	120	112	120	112	120	112	120	112	120	112	120	112	120	112	120	112	120	112	120	112	120
		C	03	02	03																							
		D	25	25			25																					
3 MACHINE	M T W T F S	A																										
		B																										
		C																										
		D																										
3 MACHINE	M T W T F S	A																										
		B																										
		C																										
		D																										
3 MACHINE	M T W T F S	A																										
		B																										
		C																										
		D																										
4 FOUNDRY	M T W T F S	A																										
		B																										
		C																										
		D																										

847

1153

810

75

85.7%

Time + work = 847 + 1153 = 2000

Extra tools + broken tools + Demerits = 20 + 75 = 285

Credit - Debit = 2000 - 285 = 1715

Reduce to percent = 1715 ÷ 20 = 85.7% Final grade.

FIG. 9

## LIST OF FORGE WORK

Students registered for one credit, work ODD numbers only.

EX. NO.	SIZE OF	LOCATION	COST	CLOCK TIME POINTS		NAME OF JOB	
	MATERIAL	AND WEIGHT		HRS. MIN.	TIME		
4th Week	1	1/2 x 1/2 x 8	.62	.05	3:55	98	Drawing Out
	2	1/2 x 1/2 x 5	.41	.04	3:00	75	Backing Up
	3	1/2 Dia. x 6	.33	.04	4:40	116	Rapping Peg
	4	1/2 Dia. x 5	.30	.04	3:45	93	Squaring
	5	3/8 Dia. x 8 1/2	.28	.05	2:00	50	Bend Ring
	6	3/8 Oct. T. S. 14 in.	.24	.12	5:00	125	Screw Driver
	7	3/8 x 1 x 15	1.65	.16	4:00	100	Lap Weld
	8	1/2 Dia. x 9	.48	.06	3:45	93	Ring Weld
	9	1/2 x 1/2 x 8 1/2	.28	.12	3:50	95	Poker
	10	3/8 x 1 x 9 1/2	.93	.08	7:00	175	L-Weld
8th Week	11	3/8 x 1 x 9 1/2	.93	.08	4:00	100	T-Weld
	12	1/2 Dia. x 6 1/4	.32	.04	5:00	125	Bolt
	13	3/8 Dia. x 18	.40	.05	4:40	116	Links
	14	3/8 x 1 x 4 1/2	.42	.04	4:25	110	Hook
12th Week	15	7/8 Oct. x 6	1.00	.25	3:00	75	Flat Chisel
	16	7/8 Oct. x 6	1.00	.25	5:40	141	Cape Chisel
Last Week	17	2-Pc.-7-16x12R	2.50	.20	7:30	187	Tongs
		1-Pc.-7/8 x 7/8 x 8					
	18	Spcl.—(for vacation days)			2:30	62	Selected
	19	Spcl.—(for vacation days)			2:30	62	Selected

FIG. 10

UNIVERSITY OF NEVADA		DEPT. No. 2	
School of Mechanical Engineering			
STATEMENT OF POINTS EARNED			
Total of 2000 points required per semester for 100% grade			
Mr. Jones, W. L.	SHOP No. 32	MONTH OF Jan.	
POINTS EARNED AND LOST		DEBIT	CREDIT
Attendance.....			847
Completed Exercises.....			1153
Broken Tools.....		175	
Extra Material.....		35	
Extra Fuel.....			
Demerits.....		75	
		TOTAL	2000
A. W. Preston			less 285
Instructor			1715

1715 divided by 20 = 85.7% Grade

FIG. 11

as the points earned, which in the case of a one hour or credit course, is then divided by 20 to reduce the points to a percentage. In case the students are taking two credits, it is necessary to divide by 40, etc.

*Example for Grading.* Fig. 10, shows a complete list of work required in the Forge Shop for 2 credits. This includes the number of the exercise, size of stock, name of the job, weight of the material, cost of material, and standard time in hours and points. Students registered for one credit will work odd numbered exercises only.

A chart showing exactly how much work should be completed in a given time is posted on the bulletin board. This chart, shown in Fig. 10, is of considerable convenience to the student.

A form, shown in Fig. 11, is filled out and given the student at the end of each semester, the marks also being entered in the total shop record, Fig. 9.

For example, this is the record of Mr. Jones. From the statement in Fig. 9, we see he earned 1153 points, having completed the work in less than the standard time, therefore earning a bonus of 153 points. Inasmuch as he has gained 153 points, this will automatically

shorten his required attendance, therefore reducing the clock time to 33 hours, 22 minutes, or 847 points. Then 847 points for attendance and 1153 points for completed work will total 2000 points.

The 285 points for broken tools, extra material and demerits must be deducted from this, thus leaving 1715 points. Since 2000 points represents 100% grade for a one hour course, the net 1715 points must be divided by 20 to get his grade in per cent.

A full semester's work consists of 16 two-and-one-half hour periods or 40 clock hours. The 25 points per hour for attendance makes the total points for full attendance 1000; as stated, Mr. Jones because of his bonus, only required 847 points for attendance, which at the rate of 25 points per hour represents 33 hours and 22 minutes as his attendance. His bonus, then, consisted in shortening his semester by 6 hours and 38 minutes.

ADVANTAGES

1. The desire for a bonus keeps students from loitering and as a result more work and better work is accomplished during a semester. In two cases on record this gain was over 33½ per cent.

2. THE demerit system eliminates waste of material and carelessness in the operation of machines.

3. The student knows at all times his earnings. He practically grades himself and as a result cannot be dissatisfied with his final mark.

4. Thruout the course the student is a shop workman and learns to see things from the workman's standpoint. This

enables him to be a better director of labor, a position which he naturally expects to attain.

5. He does his shop work under conditions very similar to those found in commercial shop practice and therefore is made familiar with shop system. He will therefore be able to systematize the work in any shop with which he becomes connected.

## FARM SHOPWORK

E. W. LEHMANN

Professor of Agricultural Engineering, University of Missouri

THE course in Farm Shopwork in Vocational Agriculture should be an elementary course in practical mechanics as applied to problems on the farm. While the work should be practical, the basic principles and processes must be emphasized rather than overlooked. The work must

n a project basis and every project must be the construction or repair of something used on the farm, the planning of some device or the study of the operation of some machine.

Preliminary to beginning work on any project the class should be given definite instruction covering principles and processes involved, materials used, tools required and the relation of the job to farm production or to living conditions on the farm.

An essential requirement of the work in the farm shop is that each project, as far as possible, be definitely tied up with an agricultural project. This is possible where the same teacher teaches agriculture. When the students are building self-feeders they can get a lesson in methods of feeding and kind of rations. When repairing the pump on a spraying machine they can get a lesson in spraying, when to spray and the kinds of solution to use. When building feeding floors and manure pits they can get a lesson on the value of manure and how

it should be handled. When building a seed testing box or a rack for seed corn they can get a lesson on the value of seed selection and testing. When putting in a septic tank or remodeling a privy they can get a lesson on sanitation and its relation to the health, the happiness, and the success of the farm family. In fact, the farm shopwork lends an interest to all other lines of work. There is a strong appeal to the average boy's mechanical sense, and often times a lesson in farm crops or in farm management can best be driven home when it involves the study and investigation of certain machines, or the construction of a certain piece of equipment.

The average boy is happy when making something that is useful, or when tinkering with a machine; making something out of that which has apparently been discarded. The characteristic can be encouraged in the work in farm shop.

Much of the work in farm shop might well be organized to meet the requirements of the individual student. This applies particularly to the home projects. The student should be encouraged to take pride in the equipment he uses, as well as in the crop or stock he produces. He should be taught that one's efficiency and success depends much on the equipment. The stu-



dent who has a home poultry project should be required to build or remodel a poultry house as a home project in farm shop work. The student who has a pig project might well build a hog house or feeding floor, and the student who is growing a plot of corn would be required to build a rack for seed corn and a testing box.

Much good will result from the interest that can be created in improving conditions about the home. Repairing buildings and fences, providing better gates, the use of paint and wood preservative, building walks of concrete, making the privies sanitary, constructing septic tanks and installing plumbing and heating systems, all of which go toward making the farm a more desirable place to live. be classified as:

1. Projects involving the use of certain classes of tools in simple construction or repair work, and getting acquainted with the various processes involved.

2. Projects in which the student is required to construct or repair something where definite instruction and a complete plan are given.

3. Projects in which the student can use his initiative in planning, making drawings, and building something of value to use on the farm.

4. Projects in which the student will be given an opportunity to study and investigate the utility of different types of machines and make a report on the same.

5. Projects in which the student will be required to repair and adjust machines of different kinds.

The subject-matter in farm shop work includes:

1. *Metalwork*: The study of materials, with problems in forge work and sheet-metal work. Exercises in forming, welding, soldering, making tools, and tool and machine repairs.

2. *Woodwork*: The study of different woods used on the farm with problems involving various tool processes. The making of pieces of equipment of definite value in connection with farm work.

3. *Concrete Work*: The study of concrete materials, proportion, mixing and placing, with problems in the construction of side-walks, floors, blocks, fence-posts, hog wallows and septic tanks.

4. *Rope and Leather Work*: The study of the use and care of rope, with problems in tying knots and making splices, halters and ties, and harness repair.

5. *Machinery and Tool Repair Work*: A study of different machines and tools used on the farm, with problems in their repair and adjustments. Belt-lacing and babbiting included.

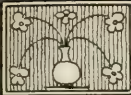
6. *General Household Mechanic Work*: The study of sanitary equipment, water, lights, and heating systems with problems in their installation.

7. *General Building and Fences*: A study of building, design, and arrangement, also fences, with problems in their construction.

With much of the work in farm shop the farm may be made the laboratory. Construction work and repair jobs may be carried out on nearby farms. Students can not only be encouraged to make improvements, but the work can actually be done. Machines can be studied, used and adjusted under actual working conditions. The various operations can be analyzed, and the cost of doing a certain job can be determined.

*Thirty boys working at benches in a Manual Training Centre are not receiving half the benefit that these same boys would secure if they were engaged on a cooperative effort to erect a shed or to fence their garden.*

—PROF. J. J. FINDLAY, OF ENGLAND.



## EDITORIAL REVIEW FOR THE MONTH



### THE PRESIDENTIAL CANDIDATE ON EDUCATION

ONE of the August numbers of *School Life*, issued by the U. S. Bureau of Education, contained the statements concerning education in the Republican and Democratic platforms. This number also contains brief personal statements concerning education from the four candidates, Senator Harding, Governor Cox, Secretary Roosevelt and Governor Coolidge. It is gratifying to see that all recognize the national importance of efficient schools and effective teachers. Quoting from each, Mr. Harding says,

I think it is highly important that we contemplate the cause of education from the national viewpoint. I do not mean thereby that there shall be a national trespass upon the right of States in matters of education, but I do think it is exceedingly important to get the broader viewpoint of the Nation. We have been making notable progress in coming to the realization of the importance of our public schools and are coming to the wholesome awakening about their need of the more generous support.

Mr. Cox says,

We hear much these days about the work of reconstruction, and yet in the plans that are made for it we do not observe a vigilant attention to the very base of our whole civilization, the schools themselves. When we measure the service rendered by the schools we can not escape the belief that society is not making sufficient contribution for their support.

Mr. Roosevelt says,

We talk glibly of our wonderful American educational system, but there still remains so much to be done in the way of extending and improving it that no citizen should rest content until the necessary steps have been taken.

Nearly one-fourth of the first million and a half men taken into the Army under the recent draft system were wholly or in part illiterate.

Two great goals must be sought—first, education must become truly universal, reaching into every corner of every State and of every community;

secondly, the profession of teaching must become dignified as the foundation of modern democratic life. The teachers of the Nation must receive not only adequate pay but have a standing in the community which will make their position that of the highest possible influence for the good.

Mr. Coolidge says,

A highly enlightened public policy must be adopted if the cause of education is not to break down. It is perfectly clear that the public schools must have the most liberal support, both moral and financial. Particularly must the people exalt the profession of the teacher. That profession must not be abandoned or be permitted to become a trade for those little fitted for it. It must remain the noblest profession. There are no pains too great, no cost too high, to prevent or diminish the duty of the people to maintain a vigorous program of popular education.

### AN INCREASE IN CHILD LABOR

A REPORT issued by Clyde A. Brown, acting director of the city vocational guidance bureau of Chicago has been getting the attention of some of the leading newspapers of the country. They notice especially his statement that this year in the City of Chicago approximately 4,000 more children are at work than there were one year ago. This increase in child labor is said to be general in the Middle West, but exceptions are noted in Missouri, Kansas and North Dakota.

Necessity of the child helping the family meet the high cost of living, the pulling power of higher wages, and scarcity of adult labor, together with the discovery by employers that women and children often could take the place of men, were cited by Mr. Brown among reasons for a similar increase in child labor in other parts of the United States.

Minnesota officials report that child labor is nearly doubled in that State. The greatest increase, they say, is among children of the "white collar" class, whose parents have been forced by rising prices to permit their children to work. About three thousand under sixteen years of age are now at work in Minnesota.

In an editorial entitled "Everybody Works but Father" the *Chicago Tribune* says,

The figures reflect a dangerous change in economic, industrial, and moral conditions. The increase of child labor comes in a period of general prosperity and more or less general extravagance. Whereas formerly children were forced into industry by actual need of food, clothing, and shelter in their families, it now appears that they are to a considerable extent being lured from school by high wages and a demand for luxuries.

The high wages offer economic proof that their services are needed. The work must be done. If adults cannot or will not do it, the children will. Mr. Brown attributes the situation in part to unemployment of parents because of strikes. He might go farther and explain the strikes, in many cases, are due to the efforts of parents to reduce their hours of labor. In that purpose they are succeeding to a marked extent.

In other words, the labor of adults is being reduced. There is an economic demand for a certain amount of labor, and the children take the jobs. Their education is sacrificed, and they enter upon life with a handicap. That is bad for the children, bad for their future citizenship, and bad for the nation.

One way in which it can be remedied is for father to go to work.

The *New York Evening Post* says,

It is a fair question whether the laxness to which we became accustomed during the war is not still showing its effects in indifferent and downright neglect. We could keep the children out of the stores, factories, messenger service and other jobs now being prematurely filled by them if we wanted to.

To this the *Buffalo News* adds

The children should have their chance; they should have the full measure of childhood and full enjoyment of the opportunities that rightly go with it for education and physical development. The safeguards with which we have laboriously surrounded them against industrial exploitation should be strengthened and enlarged; they should in no wise be reduced. We may expect that the women voters will make it their chief concern to see that the children of America have the protection which they so much need.

*To fit us for complete living is the function which education has to discharge.*

—HERBERT SPENCER.

## ON THE ADMINISTRATION OF THE SMITH-HUGHES LAW

WHEN I received the copy of the resolutions passed by the National Education Association at the convention at Salt Lake City last July, I noticed especially the one favoring a change in the administration of the Smith-Hughes law to avoid interference with the autonomy of the states.

I wondered whether this was due to real or imaginary causes and what was behind it. So I wrote to Secretary Crabtree, of the National Education Association, who sent me a stenographic copy of the discussion with permission to use it if I wished to do so. I therefore print it in full because it is interesting reading and because it throws some light on the resolution:—

*Miss Anna Webb Blanton:* (Reads) We favor such change in the administration of the Smith-Hughes law as will in the future avoid interference with the autonomy of the states in the plans and management of vocational education.

*Miss Anna Webb Blanton:* Madam Chairman, I move the adoption of this section.

*Mr. Kirkham* (Utah): May I speak to that motion. My name is Mr. Kirkham, State Director of Vocational Education for Utah.

*Miss Anna Webb Blanton:* I claim the right to close any debate on any section of this report as chairman of the committee.

*Mr. Kirkham:* (Utah) It is my understanding, and I have been a state director from the beginning of the time when this law was passed, that the law is not only so written that there is complete autonomy of the states, but it is thoroly an administrative principle of the Federal Board, that the states have complete autonomy. I have helped to write our own state plan and I have consulted with the Federal Board and the directors of the United States. I wonder if we are not making a mistake as a body of teachers at this time to call attention to any Federal Board or any administrative body at Washington as interfering with the autonomy of the states. When there is before us such an important matter as the Smith-Towner bill it is well enough for us to be thoroly united at this time and not raise any controversy at this point. Therefore, I believe it would be wise, a matter of great discretion on our part, to not pass this resolution as it is now



formed. If there be any one here who knows that there is a single state in the United States whose autonomy has been interfered with by the Smith-Hughes law, I would like to know it and report it to the Federal Board, because it would be immediately remedied.

*Mr. Kirk (Missouri):* Madam Chairman, I informed the gentleman that I represented a state in which the autonomy of the state under the Smith-Hughes bill is not only interfered with but it is absolutely ignored and overruled, and the Federal Board tells us where we may get on and where we may get off.

*Mr. Pratt (Utah):* The Smith-Hughes law provides that a man must devote himself wholly and solely to a small group and in any rural community of this state or any other state that would mean I would have to take five or six or seven men and stay with them in blacksmithing, painting, or brick-masonry or any other trade, at least half a day. I could handle two small groups in a day. Such a program in this state or any other state would call for a hundred teachers. It doesn't work out in rural communities; so the motion of Miss Blanton ought to be carried. It doesn't work as they intended it to work.

*The Chairman:* What is your name?

*Mr. Pratt (Utah):* Pratt of Utah.

(Cries of question, question).

*Miss Anna Webb Blanton:* Madam Chairman, I claim the right to close the debate. I am state executive officer of the Smith-Hughes work in Texas. I can tell you how autonomy of the states works. It is like the relations between a certain husband and wife of my acquaintance. One day the wife said to the husband "Charlie, I think I ought to have my way sometimes; you always have your way." The husband thought a moment, then he said, "That's so, Edith, you ought to have your way once in a while. I'll tell you how we'll fix it, when we agree you can have your way; when we disagree I will have mine. (Laughter and Applause).

#### A BETTER CITIES CONTEST IN OKLAHOMA

**D**URING the years 1915-1917 inclusive 85 cities in Kansas entered into a contest to determine which city in the state should prove to be the best place in which to bring up children. The plan of this contest originated with Professor William A. McKeever of the University of Kansas, who carried it thru with great success. Winfield won the

first prize of \$1,000, and has enjoyed an era of prosperity since that time on account of the reputation gained thru the contest.

Professor McKeever is now in charge of a similar contest in Oklahoma. Working with him is Dean W. W. Phalen of Oklahoma University and R. H. Wilson, state superintendent of public instruction. The Rotarians of Swannee have offered a cash prize of \$2,500. The contest will continue till November, 1921.

The score card for this contest covers (1) play, (2) industry, (3) schools, (4) health, (5) scoutcraft, (6) moral safeguards, (7) sociability, (8) religion, (9) service, (10) housing.

If any reader wants to know what makes for ideal modern community conditions for children and young people or to check up his own city by this standard, we advise him to write to Professor McKeever for a copy of this score card.

#### PROFESSOR MCKINNEY BECOMES A DIRECTOR OF CORRESPONDENCE SCHOOL WORK

**T**HE American School of Correspondence of Chicago needed an educational director who was a real educator and a man who could see education from the viewpoint of an industrial worker, and they selected James McKinney, assistant professor of industrial education of the University of Illinois, who has been in charge of the teacher-training work of the University in the city of Chicago.

Probably one of the large elements of choice in selecting Professor McKinney was his unusual experience in getting an education. As he says, it was taken on the "a la carte" plan rather than the plan of the "three course dinner." In other words, Mr. McKinney has been going to school and getting experience in the industrial world as he was moved by his inclinations and permitted by his bank book.

Mr. McKinney completed the work of an elementary school in Scotland at the age of thirteen. He served a five-year apprenticeship to a cabinet maker in Dundee, Scotland. During this same period he attended one of the large Scottish technical schools where he completed his secondary education and re-



JAMES MCKINNEY

ceived an honor grade diploma from the City and Guilds of London Institute.

He was interested in boys and that interest led him to want to become a teacher. He came to America with this aim in mind.

After working a year with one of the large construction companies in New York City he started upon another "apprenticeship" with Arthur W. Richards and Leonard W. Wahlstrom at the Ethical Culture School. He was enrolled as a regular student in the manual training normal course, but he says that in reality he worked, dined and slept with Mr. Richards. After graduation from this course, at the end of two years, he became a teacher in the Ethical Culture School where he remained for eight years. While in this position, besides being a scout master, and recreating himself in

other similar ways, he commenced a course in training under Professor Dean of Teachers College.

During the war he was with E. E. MacNary in the Emergency Fleet Training work, and here took his third "apprenticeship" under Charles R. Allen. At the close of the war he came to Chicago where he has spent two years in training mechanics to become teachers.

Mr. McKinney said a few days ago that the big feature of his education was his association with real men, and that he thought he might very appropriately designate the courses he had taken by the names of the men under whom he had worked rather than by the titles that appear in college catalogs.

After all, isn't that the way that most of us do when we stop to think it over? Mark Hopkins and the famous log still survive even in our training schools, and the great universities. From now on Mr. McKinney will take the Mark Hopkins end of the log in a great correspondence school.

#### S. J. VAUGHN GOES TO UNIVERSITY OF ILLINOIS

THE University of Illinois has selected S. J. Vaughn, director of industrial education at the State Normal School, DeKalb, Ill., to succeed Professor Ira S. Griffith, who has gone to the University of Wisconsin. While Mr. Vaughn is known in the state on account of his work at the Normal he is much more widely known as one of the editors of the *Industrial Arts Magazine*, as a genial public speaker and an active worker in several professional organizations.

As he, himself, has often told you, Mr. Vaughn is from Missouri where he learned the printer's trade, graduated from Weaubleau Collegiate Institute and later from Drury College where he received the degree of A. B. Since then he has done

some graduate work at the University of Missouri and the University of Chicago. He has been supervisor of manual training in Springfield, Mo., and Joliet, Ill., and head of the manual training departments in the Southwest State Teachers'



S. J. VAUGHN

College, Springfield, Mo., and the Northern Illinois State Normal School. He is author of a good book on printing.

During the war he spent one year as officer in the army—seven months as supervisor of vocational work at Fort McHenry, Md., and five months as assistant editor of *Carry On* at the Surgeon General's Office in Washington.

Mr. Vaughn has served as president of the Illinois Manual Arts Association, the Western Drawing and Manual Training Association and the Vocational Education Association of the Middle West. He brings to the University a rich experience and a point of view that will serve him well in his larger work.

#### GRAMMAR GRADE MACHINE SHOP WORK IN DETROIT

THE city of Detroit is offering a great variety of opportunities for practical instruction in the public schools. I was much impressed with this fact when visiting there last May. Moreover, some of the most progressive ideas in manual training and elementary industrial work are taking root in the Detroit school system.

One of these is that boys who do not plan to complete the high school course should have an opportunity to devote a considerable part of their school time to the study of a possible future vocation before the end of the elementary school period. This idea worked out in practice has resulted in what are called "industrial information courses." There are two of these. In the elementary course, corresponding to the seventh grade, the students are given several lines of shopwork in the year:—Woodwork, 10 weeks; elementary metalwork, 10 weeks; electrical work, 10 weeks; sheet-metal work, 5 weeks; and plumbing fixture repair, 5 weeks.

In this course two hours daily are devoted to shopwork and one to drawing. Three hours are given to academic subjects. In these three hours all the required academic subjects are given.

In the advanced course, corresponding to the eighth grade, each student devotes all his shop time to one branch or trade instead of to several, as in the elementary course.

There is a third course called the industrial trade course which is for students who are fifteen years of age who have passed thru one of the industrial information courses. This course, also, is one year in length. During that time twenty periods a week are allowed for shopwork and five for mechanical drawing. Two academic subjects, English and math-

*There is virtue yet in the hoe and the spade,  
for learned as well as for unlearned hands.*

—EMERSON.





ELEMENTARY MACHINE SHOP, NORTHWESTERN HIGH SCHOOL, DETROIT, MICH.

matics must be taken. Concerning the course the director, J. H. Trybom, says, "This course is a trade course in the sense only that it lays the foundation for a future occupation of the student. The actual skill needed to become a journeyman mechanic must be acquired in the manufacturing plant. The only claim made for this course is that it will give successful students a more rapid promotion in the shop as to wages and responsibility."

Such industrial information and industrial trade courses are given in each of seven high schools in the city. I visited the Northeastern High School. I was interested in all the shops, but especially so in the machine shop where a successful effort has been made to install a comparatively inexpensive yet effective equipment. All the lathes but one (and there are eleven in the room) are 8 in. swing. The equipment also includes 2 milling machines, 1 sensitive drill, 1 tool grinder, 1 small bench grinder, 1 power hack saw, a muffle furnace, an anvil, 12 benches with vises, and individual drawers for students.

I understood that there were five such equipments in the city and that they were proving satisfactory for the class of work undertaken. The kind of problems given in these shops is indicated by the accompanying photograph and the one shown on the cover page.

#### A PERSONNEL INSTITUTE

A RECENT article in *New York Women's Wear* tells of the establishment of a "personnel institute" by the National Association of Corporation Schools which has voted to change its name to National Association of Corporation Training. C. F. Henderschott, secretary of the Association, is quoted as saying that \$100,000 will be raised each year of the first few years to finance the scheme.

During the coming year it is expected that the property for the building may be acquired, but the erection of the plant will not be undertaken for one or two years hence.

A committee on permanent location appointed recently and headed by John McLeod, assistant to the president of the Carnegie Steel Co., is understood to be choosing between New York, Buffalo, Pittsburgh and Niagara Falls.

By "personnel institute," according to Mr. Henderschott, is meant an institution parallel in several ways to Harvard, Yale or the Massachusetts Institute of Technology. Instead of teaching academic or the more recognized technical subjects, this institution will devote itself to the study of training, the science of employment management, and its allied subjects.

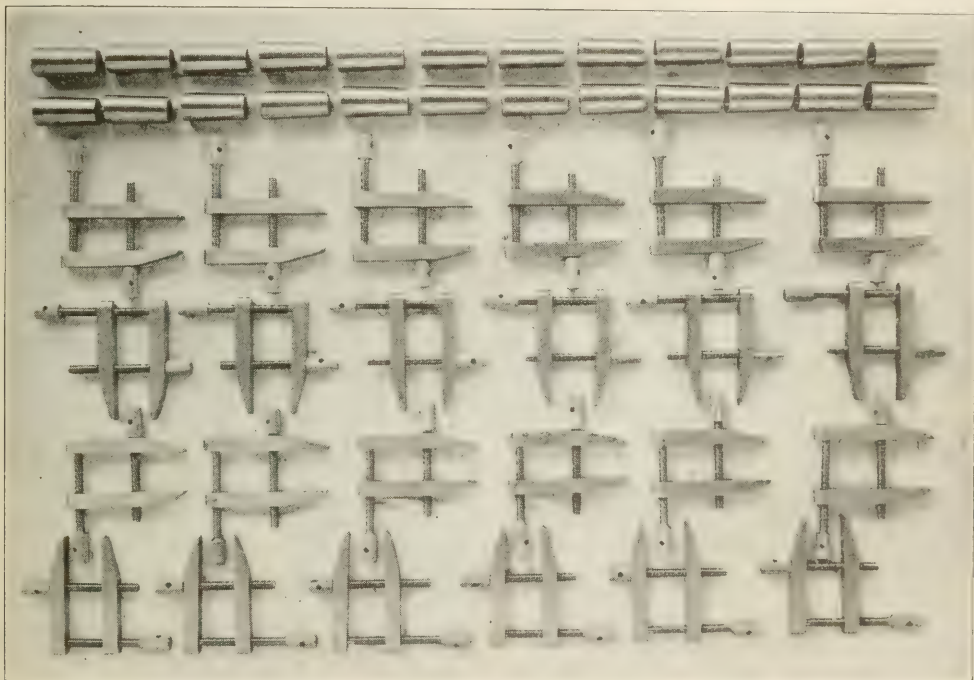
The composition and use of rating scales, job analysis, psychological tests, the training of directors and welfare workers, will be studied and taught here. A laboratory in research work will be maintained, whose workers will go out into the industrial and commercial fields and get information which will be compiled for the courses to be taught here. The results of this research will be passed on to

#### A SOCIETY FOR FOREMAN TRAINING

THE students taking the foreman training course at the Oswego Normal School during the past summer under the direction of Charles R. Allen, agent for the Federal Board for Vocational Education, started a new national organization. As a compliment to Mr. Allen it was named "The Allen Society for Foreman Training."

The following officers were elected:—

President, Arthur E. Newton; assistant manager of the Utica Drop Forge and Tool Co., Utica, N.



TOOLS MADE BY DAY INDUSTRIAL CLASS IN MACHINE SHOP, DETROIT, MICH.

colleges which have business administration courses.

The faculty will be drawn from employment men and educational directors who are distinguished business successes.

"The trouble with the college professors," said Mr. Henderschott, "is that they have never met a payroll. Men in industry know first of all that their plans must all be operated for profit."

The program of learning will be guided wholly by the needs of member companies, just as the scope of the organization's past activity.

Y.; Vice-President, Miss Cémira Howard, assistant superintendent of the Dutchess Manufacturing Co., Poughkeepsie, N. Y.; Secretary and Treasurer, Lavont C. Allen, plant engineer, Willys Corporation, New Gear Division, Syracuse.

The purpose of the society is to promote and encourage the training of men who will be able to train workers to become better and more efficient foreman.

## A POINT OF VIEW

THE expression "intellectual food" is used. It is my purpose to write several messages on the possible methods of serving such food, using similes taken from eating place nomenclature.

When I was a boy on my first excursion trip my father handed me an immense cardboard labelled "menu." I whispered in high pitch, "How much can I order and what is the limit?" The answer was, "Sonny, eat all you want. It costs a dollar and a half anyhow. But leave the cardboard." I piled in. Celery, radishes, pickles, cut flowers, bread and butter were spread before me. Soup was served, then fish, then entrée, then punch. But poor me never arrived at the regular meat course and vegetables; to say nothing about the ice cream, cake and coffee. A tragedy had come. I was full.

Now educationally there has been served for many years a "table d'hote." It begins with radishes and cut flowers in the kindergarten, reaches the meat course in the last two years of high school or later, and finished off with black coffee and cigars in a post graduate university. It is unnecessary, even unwise, to condemn it. It was laid out by such educational chefs as President Elliot of Harvard, and well serves its purpose just as does the hotel serving the \$1.50 "take-it-or-leave-it" meal. To eat such a meal takes a dollar and a half, an hour and a half, and sometimes, I fear, a stomach and a half. One needs the money, the time and the capacity. Persons who patronize such meals put on their best clothes and sit down comfortably and contentedly to the task before them.

Now an educational table d'hote requires figuratively speaking a dollar and a half, an hour and a half and an intellectual absorbing capacity of one and a half. One readily grants that it is a

balanced meal. The cut flowers in the course make it attractive. One can always nibble at the busy-work pickles between the courses. One can make himself feel as tho he is doing something while putting butter on bread, and then can settle down to the hearty meat courses at the end of the high school or in the college.

I am not criticizing the procedure as planned by committees of fifteen or fifty. But the fact remains that children sit down 100% strong at the soup course, dwindle to 60% or less before they get to meat, and the educational black coffee's are too few to mention. Reason? Most of us haven't the one fifty, the one and half hours, or the intellectual digestion ability. We haven't the clothes, the time, the money, or the inclination to dress up and sit around while some employee serves us what the management thinks is good for us. We like soup, perhaps, but we are pushed on to fish. We like fish and admire the sample served; but we are told that meat is coming. We like meat and vegetables; but we are informed that it costs extra for extra portions. Take it or leave it is the unwritten law. We have fixed it up so you will be very well filled. It will not hurt you. One subject fits in with or balances against the other so no harm is done.

Restaurants serving table d'hotes are not very popular in a large sense. They serve only a few hours a day, require a large equipment and personnel, furnish an orchestra and some papiermache palm trees.

Schools serving table d'hotes are open only five days a week for forty weeks for a few hours a day. They keep a Latin chef for a few pupils; cut flowers and music for culture; freehand drawing for



a pickle service and meat for the few who are left. I am not saying anything about doing away with the garnishes or throwing out the flowers or putting the meat course earlier. I am simply saying that a well-balanced course such as has been laid out from kindergarten thru the graduate school is no more available to the mass of people, young or old, than the hotel table d'hôte. People eat when they are hungry, at the place where they have the price, and many, at least, where there is no style—just service. Most of us are not table d'hôtiers. We are a-la-carters, quick-lunchers, or self-servers. If we have a dollar and a half, a friend, an hour or two, an ear for jazz, we go to a "quiet" restaurant around the corner and sit there without a care in the world. Meanwhile the majority of us are eating at B. M. lunches (business men's) standups or cafeterias. A few afford the luxury of an a la carte.

Now educationally speaking, thought ought to be as accessible as food. We must have more "fit the pocket" intellectual food; more appeal to the interests of the intellectual and vocational appetite; more open-all-nighters in the school sense. We must offer "combinations" of different school food at various prices (prices in this case meaning time and effort). We must have more cafeteria service and more display of the food and more labels of what it is. We must have a little McFaddenism in our menu when we tell its food values. We must have more electric signs to show where the food is

served. We must have early breakfasts for night workers and more prepared food for those who can avail themselves only of extension work. In short, while you and I can find in a strange city a hundred places to eat, running from 10 cents to \$3.00 for a breakfast, we can not easily find a place to partake of educational food. If we find it we see the sign, "Open Sept. 6th" or "Closed between 3 P. M. and 9 A. M." or "present your credentials before expecting service." Or when we ask for meat we are told, "No, not until you have taken fish." You say figuratively speaking "May I have my ice cream with my soup?" The answer is "It's not customary, but if you insist on it you may petition the faculty."

Education table d'hôtiers are indifferent to the demands and needs of a democracy. They have worked up a great menu. Serious minded men and women have debated whether cabbages (figuratively speaking, always) balance off against a course in string beans, and what the educational heat units are in water ice. They have been blind to the fact that correspondence schools, extension work, evening attendance, short courses, unit courses, trade courses, sampling courses are on the map and are desired by people who want only a "bite to eat" or "a malted milk chocolate" or a "ham sandwich" or a "dining car service."

If I have whetted your appetite there will be more in the month to come.

—ARTHUR DEAN.

*Development of the head and hand—that's what industrial education means. It is a winning team, but they can't be driven tandem; they must be hitched side by side and made to pull together every inch of the way.*

—F. H. WING.

# WASHINGTON CORRESPONDENCE

## ANALYSIS OF GOVERNMENT EXPENDITURES

**A**N astonishing revelation of the extent to which the burden of war expenditures is resting upon the people of the United States, even during the peace year of 1920, is afforded by an analysis of government expenditures made

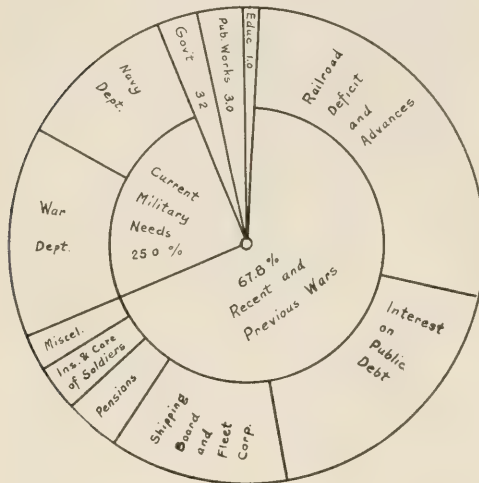


FIG. 1

Figure 1. Distribution of government appropriations for the fiscal year ended June 30, 1920. See Table 1. (Adapted from a chart by Dr. E. B. Rosa.)

summary of the expenditures is shown in Table 1.

## COMPARISON SHOWS NEGLECT OF EDUCATION

**I**N comparison with these huge expenditures for military purposes, the proportion set aside for "research, edu-

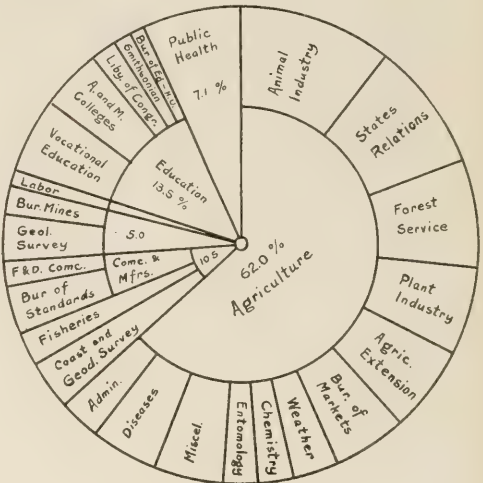


FIG. 2

Figure 2. Distribution of government appropriations for "Research, Education and Development." See Table 2. (Adapted from a chart by Dr. E. B. Rosa.)

by Dr. E. B. Rosa, of the U. S. Bureau of Standards, in an address before the Washington Academy of Sciences on "The economic importance of the scientific work of the government," and now published as a pamphlet by the Academy.

I have secured permission to publish the accompanying diagrams, which I have adapted from the charts exhibited by Dr. Rosa. Fig. 1 emphasises the startling fact that for the fiscal year ended June 30, 1920, 92.8 per cent of the expenditures of the federal government, or more than five and one-quarter billions of dollars, were incurred on account of obligations arising from recent and previous wars, and the current needs of the War and Navy Departments. A

cation, and development," is so small as to be difficult of representation on the graph.

That portion of the aggregate expenditures included under this head (Group VI of Table 1), representing 1.01 per cent of the whole, is further analyzed in Figure 2. Nearly two-thirds of all the expenditures thus classified are included in the general field of agriculture. It is necessary to add Howard University, the government school for colored youth, to the Bureau of Education in order to make a space large enough to show on the graph.

A summary of the appropriations for research, education, and development is shown in Table 2.

TABLE 1. Summary of distribution of government appropriations for the fiscal year ended June 30, 1920. See Figure 1.

	AMOUNT	PERCENT
I. Expenditures arising from recent and previous wars	\$3,855,482,583.60	67.81
II. War and Navy Departments, current	1,424,138,676.57	25.02
III. Primary government functions, including Legislative, Executive, Judicial, State Department, Treasury, Interior, Commerce, Civil Service Commission, etc.	181,087,225.41	3.19
IV. Public works, including Rivers and Harbors, Public Buildings, Reclamation, National Parks, etc.	168,203,557.46	2.97
V. Commercial or self-supporting government activities, including Post Office, Patent Office, General Land Office, etc.		
VI. Research, Education, and Development, including Department of Agriculture, Geological Survey, Bureau of Mines, Bureau of Education, Howard University, Department of Commerce, Bureau of Labor Statistics, Children's and Women's Bureaus, Public Health, Federal Board for Vocational Education, Colleges of Agriculture and Mechanic Arts, Library of Congress, Smithsonian Institute, etc.	57,093,660.93	1.01
TOTAL	\$5,686,005,705.97	100.00

I am sure these figures are of sufficient interest to every citizen to justify including them here. Do Americans really believe that education is the foundation of our national prosperity and the only guaranty of the permanence of our institutions?

#### MANUAL ARTS FOR RURAL AND VILLAGE SCHOOLS

CONSIDERABLE attention has been given during the past three years to the question of providing instruction and practice in the manual arts in rural and village schools at the annual conference of specialists engaged in the preparation of teachers held under the auspices of the Bureau of Education. At the request of the last conference, held at the University of Cincinnati in December, 1919, I appointed a committee to continue this study and report at the next meeting which is to be held in Indianapolis in December, 1920.

This committee consists of Clinton S. Van Deusen, State Normal College, Kent, Ohio; Charles H. Bailey, State Teachers College, Cedar Falls, Iowa; A. N. May, Berea College, Berea, Ky.

#### COOPERATION OF FORMER STUDENTS AND TEACHERS SOUGHT

AFTER considerable correspondence the committee has secured the names and addresses of a number of men who have had some special training for teaching manual training, and also some practical experience in farming. To these persons a letter has been sent, explaining briefly the work of the committee, and making the following specific requests:

(1) Please give a brief statement of the manual training you had as a student in (a) elementary school, (b) high school, (c) school of college grade, including the name and location of each school, and telling something of the kind and amount of manual training done in each.

(2) If you have been a teacher of manual training, please give names and location of schools, dates, and the kind of manual training taught.

(3) From your experience in school and on the farm, please give a list of things which boys on the farm and in the small villages can and do make, and which might be adapted to the school shop if suitable equipment were available, and which would be worth undertaking because of the educational value which the boys (or girls) would derive from the making or doing.

(4) Please give a list of things made or done by the fathers of such boys, which you think would be suggestive to the Committee which is making a study of this subject.



TABLE 2. Summary of distribution of appropriations for Research, Education, and Development: Group VI of Table 1. See Figure 2.

Department of Agriculture.....	\$35,855,830.14
Bureau Animal Industry.....	\$5,783,231.00
States Relations.....	4,905,820.00
Forest Service.....	4,191,869.00
Bureau Plant Industry.....	3,379,638.00
Cooperative Agricultural Extension Work.....	3,080,000.00
Bureau of Markets.....	2,811,365.00
Weather Bureau.....	1,880,210.00
Bureau of Chemistry.....	1,391,571.00
Bureau Entomology.....	1,371,360.00
General Administration.....	1,715,626.58
Biological Survey, Public Roads, Soils, Crop Estimates, Farm Management, Horticultural and Insecticide Boards, etc.....	5,345,139.56
Department of the Interior.....	3,242,148.25
Geological Survey.....	\$1,661,353.50
Bureau of Mines.....	1,216,897.00
Bureau of Education.....	241,960.00
Howard University.....	121,937.75
Department of Commerce.....	6,004,630.00
Coast and Geodetic Survey.....	\$1,925,370.03
Bureau of Standards.....	1,892,260.00
Bureau of Fisheries.....	1,274,480.00
Bureau of Foreign and Domestic Commerce.....	912,510.00
Department of Labor.....	641,830.00
Bureau Labor Statistics.....	\$321,690.00
Children's and Women's Bureaus.....	320,140.00
Treasury Department, Public Health Service.....	4,025,440.00
Federal Board for Vocational Education.....	3,182,000.00
Colleges of Agriculture and Mechanic Arts.....	2,500,000.00
Library of Congress.....	925,825.00
Smithsonian Institution.....	715,957.51
TOTAL (representing 1.01 per cent of aggregate expenditures of the federal government) ..	\$57,093,660.93

If these lines chance to be read by any one who has had experience in teaching manual training in rural or village school, and who is willing to volunteer his assistance in this important inquiry by sending material or suggestions on the four points mentioned, I am sure such cooperation will be greatly appreciated.

Does this opportunity to contribute something in a very practical way to help make better schools for the boys and girls in the country and small villages appeal to you? Communications may be addressed directly to one of the members of the Committee, or to one of the editors of this MAGAZINE.

—W. T. B.

*The chief defenses of democracy are not material. They are mental and spiritual. At the very foundation of the structure of democracy must be a sound system of public education. The general diffusion of wisdom and knowledge among the body of the people is a first essential to their welfare. Upon education the Republic must chiefly rely for its political, economic and social betterment.*

—GOVERNOR COOLIDGE.

## IN FOREIGN COUNTRIES

### A SCHOOL FOR APPRENTICES IN A FRENCH AUTOMOBILE FACTORY

IN *l'Ecole du Travail* for December, 1919 may be found an interesting account of a school for apprentices which has been established in the factories of the Peugeot automobile and motorcycle corporation. The article discusses a number of topics familiar to American readers, including the helplessness of the individual worker in modern industry, in which large scale production has been accompanied by a tremendous development of machinery, subdivision of labor, and the practical disappearance of apprenticeship. The worker tends to become a specialist who knows and can learn nothing beyond his specialty.

Declaring that all-round mastery of a trade gives the individual confidence in himself and better choice of employment, the author commends the service rendered by a good trade school. It is of the greatest value to the youth to acquire a thoro grounding in the fundamentals of his trade and an understanding of the relationships among the various processes and the principles involved. Special reference is made to the industrial school at Montbéliard (*l'Ecole Pratique d'Industrie*) and the splendid record made by its graduates.

This is why the Peugeot company holds the Montbéliard school in such high esteem that it has entered into an agreement:

(1) To offer remunerative employment in its factories, during vacation, to students of the school who are children or orphans of employes of the Company; and

(2) To place each year at the disposal of the director of the school 30 purses of 200 francs each, to be given to the most deserving graduates of the three-year's course.

In return, the beneficiaries agree to work in the shops of the Company until the time when they are called for military duty.

The Company has other factories, however, so located that it is not convenient for employes to send their children to the school at Montbéliard. For this reason, it has established three-years' apprentice courses in three factories, located, respectively, at Beaulieu, Audincourt, and Sochaux. To be admitted to these courses boys must be 14 years of age and must possess the *certificat d'études primaires*. The working day for apprentices is eight hours. The instruction is general thruout the first year, the apprentice not being allowed to specialize before the beginning of the second year.

The following outline of the course of instruction is quoted from a bulletin issued by the Peugeot Company:

#### FIRST YEAR

30 hours of shopwork: instruction given by the personnel of the factory under the direction of the chief of apprentices; adjusting, fitting, 12 hours; forging, 4 hours; turning, drilling, boring, 10 hours; chipping and filing, planing, mortising, 2 hours; repairing, 2 hours; carpentry, 4 hours.

4 hours of drawing and plane geometry.

2 hours of sketching.

2 hours of technology (common metals; description of tools, materials, instruments of measurement and precision; general discussion of the work of the foundry, forge-shop, carving, engraving, etc.)

2 hours of instruction in civics (practical morals; food, clothing, shelter; elementary instruction in physiology, health, vaccination, contagious diseases; choice of life-work; conduct in the home, the street, the shop; characteristics of successful men.)

2 hours of French.

6 hours of physical exercises (formative and corrective exercises, to counteract occupational deformities to which the young persons may be subject; simple games).

#### SECOND YEAR

31 hours of shopwork. The apprentices will specialize, and will be classified as adjusters-fitters, blacksmiths, turners-repairers-cutters, woodworkers, carpenters, molders-foundrymen.

4 hours of industrial drawing and solid geometry.

2 hours of sketching.

2 hours of technology (description of machine-tools, their construction and use; elements of physics, chemistry, electricity; the automobile, motorcycle, aviation; general discussion of forces—hydraulic, electric, themodynamic, etc.)

2 hours of instruction in civics (the nature of work—manual work, intellectual work; responsibility; wages, credit, savings banks; insurance, mutual benefit organizations, cooperative societies; etc.; capital).

1 hour of French.

6 hours of physical exercises.

#### THIRD YEAR

31½ hours of shopwork.

4 hours of drawing and calculus.

2 hours of sketching.

2 hours of technology (study of steels, heat treatment; physics and chemistry; electrotechnic; cutting speeds; time studies; maximum output of machines; sharpening and setting tools; causes of defective product; shop maintenance; net costs; overhead; stock; etc.)

2 hours of instruction in civics (rights and duties of the worker; value of discipline, honesty, energy; social history; modern industry; industrial leaders; modern installations; American methods).

½ hour of French.

6 hours of physical exercises.

Before entering, the apprentice signs an agreement to work for the Company for five years, dating from the completion of the course. He is paid 1 fr. 50 per day during the first year, 2 fr. during the second, and 2 fr. 50 during the third year. In addition, beginning with the second year, bonuses are paid for work done in the shops.

Apprentices are allowed four days vacation at New Year's, eight days at Easter, and 15 days in the summer. They wear a distinctive cap, bearing the initial "P," with the figure 1, 2, or 3 indicating the year of the course.

In order to permit an accurate account of the work accomplished, examinations are held at the end of each year. After satisfactory completion of the examination at the close of the course, the youth may obtain an apprentice commission (*brevet d'apprenti*).

The Company takes a special interest in these commissioned apprentices, and makes special provision for their advancement in the shops and for opportunities to pursue their studies and development further.

—W. T. B.

## THE GERMAN NATIONAL CONFERENCE ON EDUCATION

A *Berlin* correspondent of the *London Times* has reviewed educational conditions in Germany as reflected in the national conference on education held in Berlin June 9th to 19th. He stated that there is a sifting process going on in Germany and that the process is as merciless in the educational world as it has been in the political.

There were about 700 members of the conference, including representatives of the Government. The presiding officer was the Minister of the Interior. The work of the conference evidently centered on the reports of nearly twenty committees. In the preparation of these reports there was at times very radical differences of opinion. Apparently the same kinds of differences that have stirred Germany politically were in evidence in discussing the educational changes needed to meet new social conditions.

The tendency of the conference was in the direction of a recasting of the existing teaching by reducing the number of subjects to allow of more thoro study of those taken, and also of increased and systematic physical education.

The conference confined itself to opinions, and was not competent to pass resolutions binding even on itself, to say nothing of Parliament and the Government. It was able, however, to make many valuable suggestions.

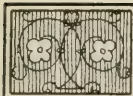
The conservative members consider that the reformers and the advocates of labor education attach far too much importance to manual training, and that they ignore or under-estimate history, German, and above all religion, with their splendid educational value, for which there is no substitute.

But there seems to be a more active and surer check to any revolutionary reforms, and that is the financial straits in which Germany now finds herself.

*If England would devote more to teachers' salaries and less to bricks and mortars the country would be better off. This is an age of materialism, and our most serious danger lies in this fact.*

—LORD BRYCE.





## PROJECTS, PROBLEMS AND NOTES



### WOODWORK DESIGN

THE shelving problem "is always with us." If the teacher of woodworking does not need shelves in his shop or stock-room some other teacher in the building does. The freehand drawing teacher wants a shelf for models, the English teacher for books, the science teacher for a new piece of apparatus, and so on. But if the school does not need shelving some boy knows who wants a shelf put up at home. To the inexperienced person all shelving is about alike; a shelf is a shelf. But to the experienced, and especially to the manual arts teacher, there are a lot of fine points in making shelves—some constructive and others decorative—and he looks at the shelving problem as an opportunity to give instruction. He rates it according as he sees much or little in it for instruction purposes.

Because I have been impressed with the lack of consideration of some of these fine points I have pulled out an old teaching note-book containing an analysis of the shelving problem and have tried to give it new life for the benefit of those who may not have had occasion to make such an analysis but have come in contact with the problem of teaching the construction of shelving.

Without entering into a discussion of the theory of structures at this time and accepting the ordinary sizes of material used in shelving we recognize that the question of strength is the primary one and that this usually depends upon (a) the kind of joints used and (b) the distance between supports. In the accompanying page of illustrations five types of joints are shown, namely, A, B, C, D and E. Joint A with its nails is the most primitive and the weakest. The weight

W might easily split the shelf at the points of nailing because the nail is driven into the end of the board. If a back is added and fastened by nailing to the shelves, considerable strength is added to the structure, but the form of construction is still weak and uneconomical, for the boards are usually thick and nails large when this form of joint is used. Sometimes wooden pins are used in place of nails.

The form of joint shown at B is only a little more desirable. It is stronger because the nails do not go into the end of the board, but the cleat is undesirable because it limits the capacity of the shelf. It is in the way when putting high books on the shelf below. C is a form of construction often used in cheap work when the shelves must carry a very heavy load. D and E are the common forms of joints used in good shelving.

The above statement gives the more obvious facts illustrated in the drawing. There are, however, others to which I wish to call special attention: Notice that the front edges of the two boards—the upright and the shelf—are flush at *a*, and the two boards are flush at *b*. Notice also that the boards are not flush at *c* and *d* and *e*, and that at *m* they are flush and at *o* they are not. Which is more desirable? Is there any principle involved? Yes, but it is one that you do not often hear stated tho usually practiced by the best carpenters and cabinet makers. Perhaps it is hardly safe to put in the form of a rule, but it is something like this: *In woodwork construction whenever it is practicable to do so avoid making surfaces flush.* An instance where this rule does not apply may be named at once, because it is not intended to

include the joining of stiles and rails of doors and other similar glued-up work.

However, there are at least three reasons for this rule, one is constructive and depends upon the nature of wood; the second concerns economy of effort on the part of the workman; and the third is decorative (using that term in the broad sense). In the first place wood shrinks, warps and twists, and there are few laws governing these changes that are of much help to the woodworker, except the general one that wood shrinks very little along the grain and a good deal across the grain. In general, it is assumed that boards of a given width will shrink the same amount, but under many conditions they do not do it. Unless the wood is carefully selected you cannot depend upon two surfaces as at *a* and *h* and *m* remaining flush very long after you have made them so. And if the surfaces are not flush when they were obviously intended to be, they suggest poor workmanship. If on the other hand one surface were  $\frac{1}{8}$ " or  $\frac{1}{4}$ " back from the other, as at *c* and *o*, there would be no suggestion of failure on the part of the workman. If they were intended to be  $\frac{1}{4}$ ", for example, a slight variation one way or the other would not be noticeable. The same principle may be applied in comparing the joint at *b* and *e*. I have often seen a cleat made as long as the shelf was wide, and after a few months the cleat was projecting beyond the front to the shelf, because the shelf had shrunk and the cleat had not, at least endwise. A far better way is to make the cleat obviously shorter as at *d*.

In the second place it takes more time and skill in most woodwork construction, when done by hand, to make the surfaces flush. This is not true of some kinds of machine work, finished on the sanding machine, but is usually true of structures fabricated and finished by hand.

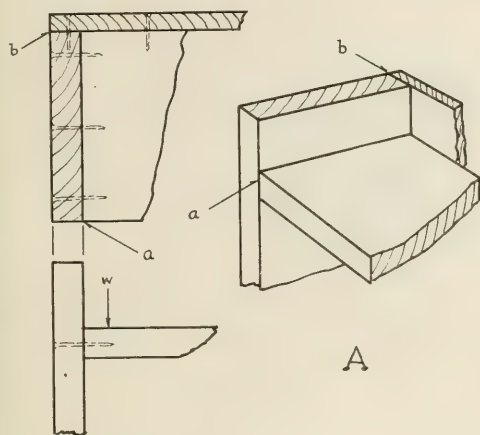
In the third place, from the decorative point of view, the strength and beauty of woodwork structures depend in large measure upon continuity of lines and shadows cast by one part upon another. Under most circumstances *o* is more pleasing than *m* because the vertical line is unbroken. I recall a cabinet with glass doors above and drawers below, designed by an architect who, evidently, was not a cabinet maker. His intention was to have all the surfaces flush on the front. Imagine it, if you can, with stiles, rails, drawers, doors all flush with the front of the body of the case. In reality it was not as you imagine it to be because the doors were twisted just enough so that when closed either the bottom or the top of each protruded from  $\frac{1}{8}$ " to  $\frac{1}{4}$ " beyond the front of the body. This made a long, sliver-like shadow beside each door. Some of the drawers protruded  $\frac{1}{16}$ " to  $\frac{1}{8}$ ", and the fronts of others were that much back of the front of the case. It was an uncomely sight from the viewpoint of a cabinet maker artist. All of these defects would have been remedied if the doors and drawers had been set in a reasonable distance. The design would have been further strengthened if the vertical lines near the corners had been allowed to run unbroken from architrave to base.

One reason why the construction at *o* is not more commonly used is, that the construction at *h* is less expensive to produce. A good economical method is to use *h*, and then face its front as at *p*. Often this facing piece is made wider than the thickness of the grooved upright piece.

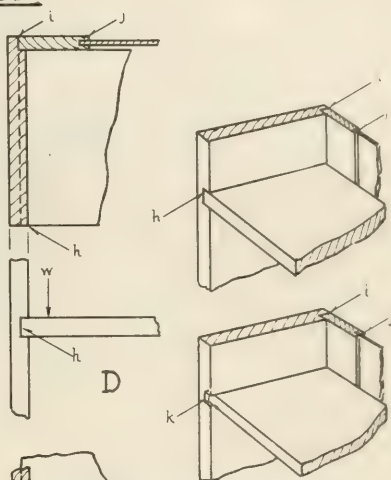
In some places where the facing cannot be used the construction *l* is desirable because it prevents the bad effect produced by uneven shrinkage shown at *k*.

In a later number I want to say something more about the application of this rule.

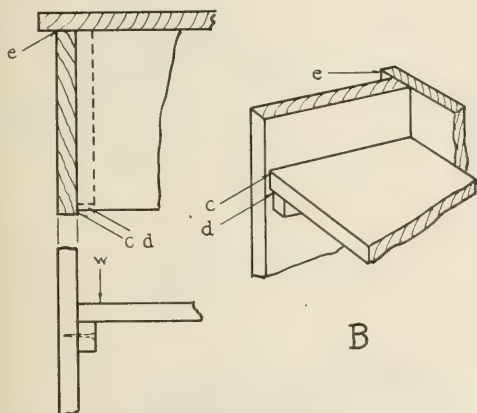
# SHELVING



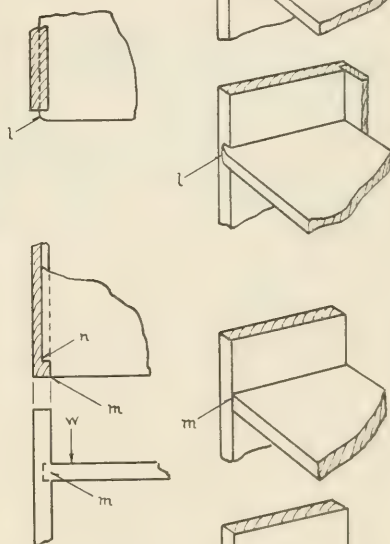
A



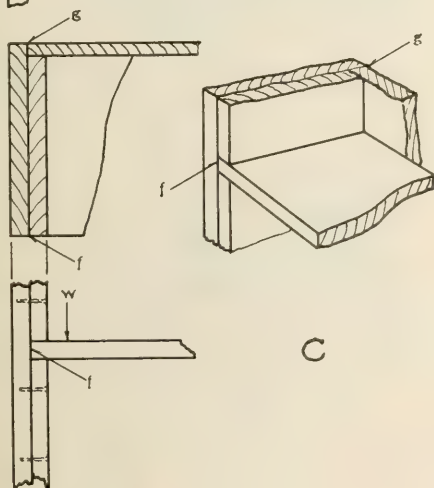
D



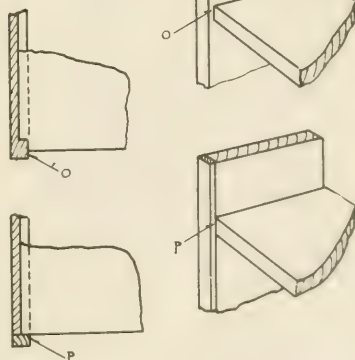
B



E



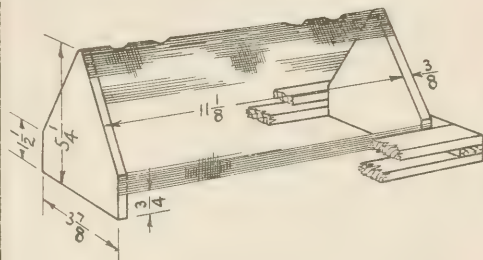
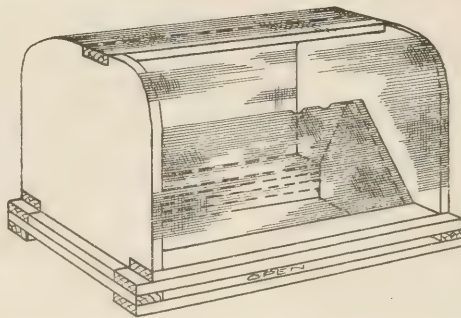
C



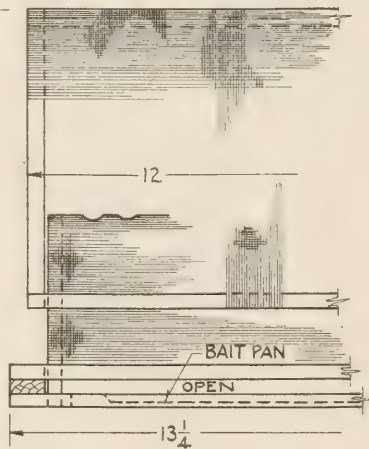
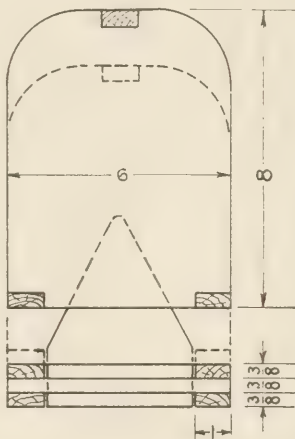
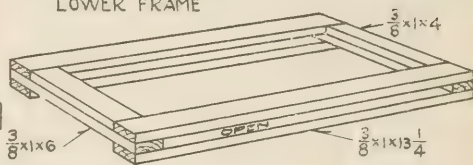
P



# FLY TRAP



LOWER FRAME





## ELEMENTARY CARPENTRY

SOME form of fly trap has proven to be a satisfactory problem in many schools. The one shown in the drawing herewith has been used in some of the schools of Cleveland, Ohio.

## ELEMENTARY CABINET MAKING

THE plant stand or taboret continues to be a popular problem. It surely is well adapted to the usual conditions of working in a school shop and it does involve some good simple problems of construction. Two drawings of such a stand are given this month. One of these—the one with the chamfered top—was contributed by the late Henry W. Leland, of Fitchburg, Mass. When sending it Mr. Leland said that it had been very much liked by the boys in his schools.

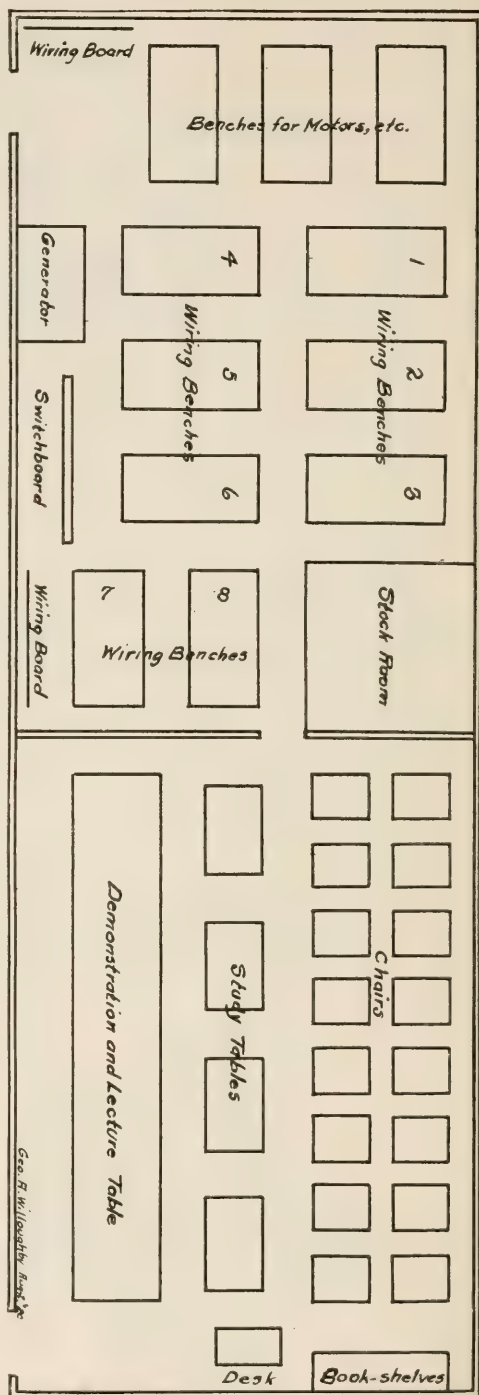
## METALWORK

THE drinking cup and the match box shown in the drawings were taken from a course worked out in Cleveland.

## A SUCCESSFUL ARRANGEMENT FOR TEACHING ELECTRICAL WORK.

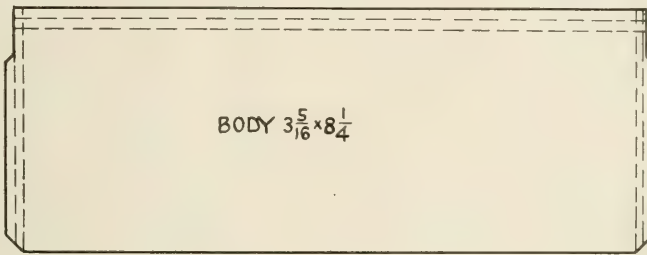
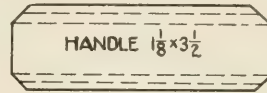
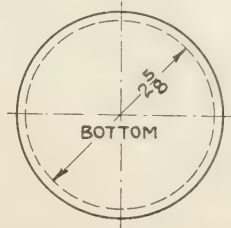
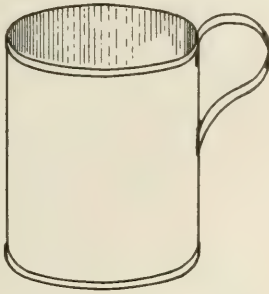
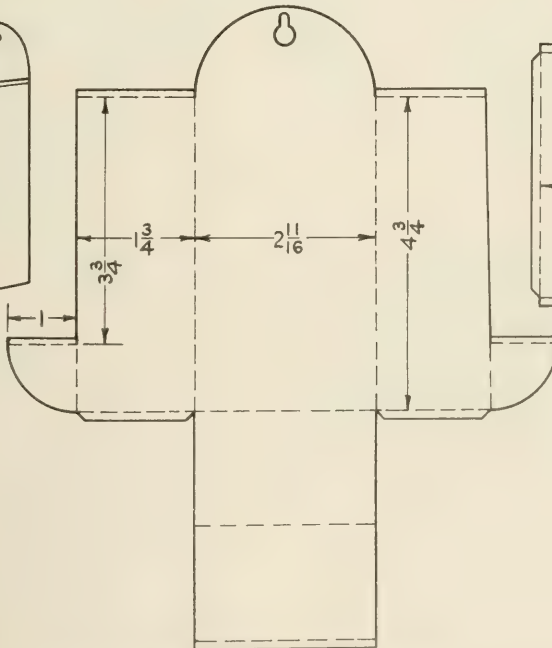
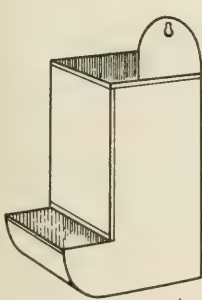
IT WAS my good fortune a few years ago to have the pleasure of starting a course in electrical work in a trade school giving all-day and evening courses to men and boys where the space available for the purpose was two rather small adjoining rooms and where the equipment was very limited and the number of students in each class was about twenty. Since its beginning the course has developed quite rapidly and is at the present time being given in accordance with the Smith-Hughes law. Many of those receiving the benefit of it are holding good positions in electrical lines. It is hoped that in giving a description of this work that points may be brought out that will be of value to those undertaking the same task.

One room is equipped for a lecture, demonstration and study room, and the other for the carrying on of laboratory work. The former is provided with a lecture and demonstrating table, tables, and chairs, and the latter with wiring benches, wiring boards, work benches, a switchboard, and a stock room. The arrangement is as shown on the accompanying diagram.

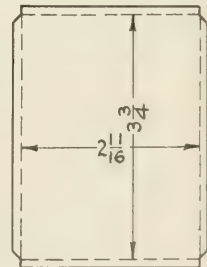


PLAN OF AN ELECTRICAL WORKSHOP



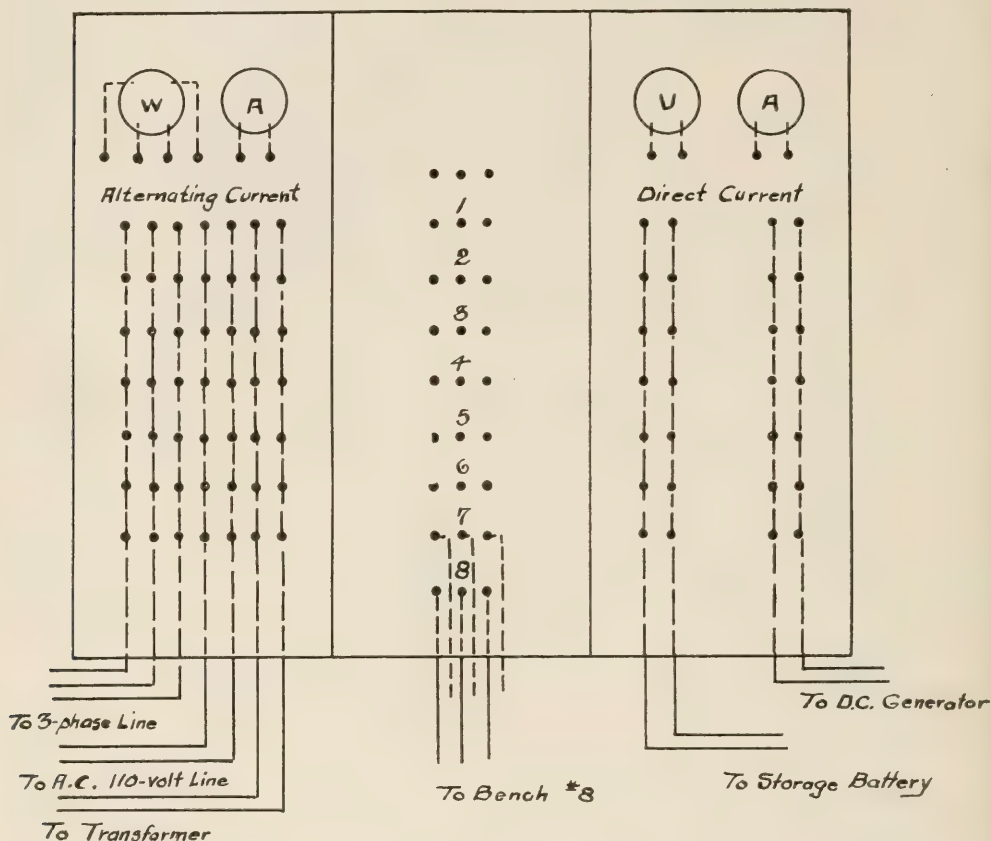
DRINKING CUPMATCH BOX

FRONT



The lecture and demonstration room is provided with a lecture table or bench upon which work can be carried on for demonstration purposes. The small tables are to provide a place for writing up notes, drawing diagrams, etc. and are supplied with a collection of electrical books and magazines for

such a way that by making the proper connections any desired voltage can be supplied, making possible the carrying on of various kinds of work simultaneously without interference. The switchboard is supplied with three-phase 220-volts, single phase 110-volts, single phase 2 to 12-volts, direct current



### ELECTRICAL LAB. SWITCHBOARD

DESIGNED, BUILT AND USED BY GEO. A. WILLOUGHBY

the purpose of stimulating interest in up-to-date topics and promoting the use of reference books.

The benches in the laboratory are 6 ft. long, 4 ft. wide and about 2 ft. high. The frames are made of two-by-fours, the sides and ends of matched lumber, and the tops of planks 2" thick. Each is provided with a vise. The wiring boards are about 8 ft. long and 5 ft. high, and are supported about 3 ft. from the floor by standards. The switchboard is of wood 2" thick, is about 6 ft. high, and is supported about 1 ft. above the floor by a framework of pipe.

The benches and wiring boards are provided with switches connected to the switchboard in

6-volts, and direct current from a laboratory generator at any desired voltage.

The connections and operation can best be understood by referring to the switchboard diagram where it will be seen that each bench switch has its terminals connected to attachments on the middle panel to which wires can be connected on the front side, and that each source of current is connected to sets of terminals of the same type. Suppose, for example, we have a 220-volt, three-phase motor on bench number 8, and that it is desired to get current to it. We would connect wires between any set of 220-volt three-phase terminals and those

numbered 8. Then suppose that at the same time we have some 110-volt lamps connected on bench number 4 and we want to supply them with alternating current. We would connect wires between any set of 110-volt A. C. terminals and those numbered 4 and we would supply it. At the same time we might have bells, low-voltage A. C. apparatus, high-voltage D. C. apparatus, or anything else on any of the other benches or boards and provide for them without interfering in any way. If the class were all beginners working on 6-volt D. C. apparatus it would be necessary only to connect all of the first two rows of bench terminals together, and then any two to the storage battery.

We can go still further. With the meters arranged as shown, it is possible to connect them in any circuit and measure the power, current or voltage and the four can be made to serve the whole class.

It is possible, also, when power is being generated at any of these benches, to use the power for operating apparatus on some other bench or benches. For example, say we have a generator on bench number 2 and we want to use the power for running a motor on bench number 7. We can connect the generator terminals to the switch on bench number 2 and get the power to terminals number 2 on the board, from which by connecting terminals 2 with terminals 7 we have the power at the switch on bench number 7. Then if we connect the motor to this switch we can operate it on the current furnished by the generator. We can measure the power if we want to.

Thus we see that provision has been made with this arrangement for supplying desired current and for taking desired meter readings for any purpose at any time. We can operate bells, lamps, alternating current motors, direct current motors, run efficiency tests, determine power factors, and do almost anything we want to with a comparatively small amount of equipment and in a small space.

GEO. A. WILLOUGHBY,  
Arthur Hill Trade School,  
Saginaw, W. S., Mich.

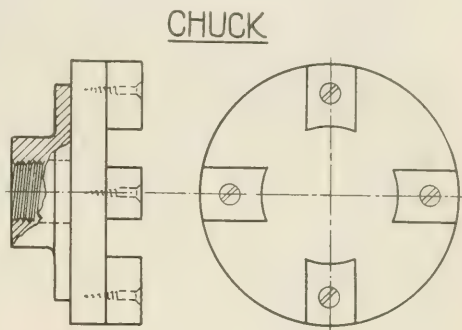
#### A WOOD-TURNING CHUCK

The following is contributed by Fred Chandler, head of the Department of Mechanic Arts in the Classical and High School, Salem, Mass:

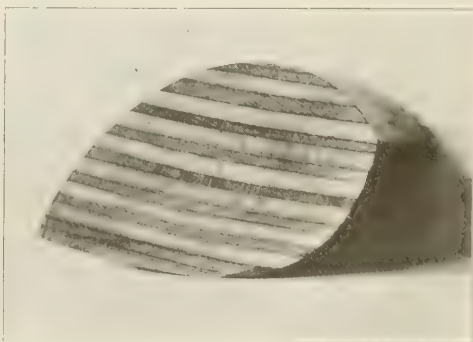
The expense of making chucks for wood-turning projects has always been a serious factor to contend with in schools where supplies are limited, and I have given considerable thought to the problem.

I found that the boys in the wood-turning classes spoiled many chucks by turning the recesses a little too large. This meant a new piece of 2" pine or other good stock, costing quite a little for each piece, and the spoiled piece was entirely useless.

After some experimenting I devised the chuck shown in the accompanying drawing and found it



in many respects superior to the old form of solid chuck generally used. After the first piece of 1" board has been turned to the desired size and the face trued up, fit four or more strips of 1" stock to the circular disk with  $1\frac{1}{4}$ " or  $1\frac{1}{2}$ " screws, allowing about  $\frac{1}{4}$ " on the ends towards the center for turning to the desired size of circle. In this chuck the boy has a chance to try several times on the same piece, as the first or large circular disk is not cut, and new strips may be added at any time to replace the ones that are of no further use. One main disk will serve a boy for the course and will prove very satisfactory.



SECTION OF A PROPELLER OF A  
FRENCH AEROPLANE

In building up the laminated black, silk cloth was glued in between some of the layers of wood to give added strength.



## CURRENT PUBLICATIONS

*The Universal Sheet Metal Pattern Cutter.* By William Neubecker. The Sheet Metal Publication Co., 154 Nassau St., New York, N. Y., 1920. Size 9 x 11½ in.; 380 pages, 681 diagrams and other illustrations; price, \$7.50.

This is Volume I of a comprehensive treatise on all branches of sheet-metal pattern development. It begins with the use of drawing instruments, definitions and geometric problems. Then follows the intersection of solids and the development of surfaces treated under three divisions: (a) parallel line developments, (b) radial line developments (conical surfaces) and (c) triangulation. In each division the principle is applied to sheet-metal forms.

After these, marine sheet-metal work, automobile sheet-metal work, guards for machinery, and articles made of heavy metal are treated. The book also includes short rules and mensuration applied to pattern drafting.

*Boy Bird-House Architecture.* By Leon H. Baxter, director of manual training in the public schools of St. Johnsbury, Vt. The Bruce Publishing Co., Milwaukee, Wis. Size, 6x9 in. ob-long; 61 pages; price \$1.00.

The author of this book takes the correct point of view in bird-house building. He says "the main thing is to consider the type of house that will appeal to the intended tenants." Basing his book upon this proposition, he proceeds to discuss the habits and tastes of the birds most easily attracted to boy-made houses, and then gives 20 plates of drawings of houses that have been tested and found satisfactory to the birds.

A dimensioned drawing of every piece of each house is given, together with a perspective sketch of the completed house. No assembly working drawings are given. From the standpoint of method in teaching the wisdom of presenting so many detail drawings may be questioned, but under certain conditions, especially home conditions and with young boys, the detail drawings are commendable.

*Elementary Forge Practice.* By Robert H. Harcourt. The Manual Arts Press, 1920. Size, 5½ x 7¾ in.; 154 pages, including 44 plates of working drawings and 57 illustrative figures; price, \$1.50.

This book gives the fundamentals of modern hand forging by presenting in a clear and very complete way the processes of making 44 typical projects, ranging from a simple ring to a hunting knife. It includes a unique series of well-drawn plates giving each of the essential steps in the projects. By this means the student learns how to

make the typical forms of general blacksmithing and tool forging. The descriptive matter is well selected and well organized.

The book is the result of a rich practical experience, supplemented by a thoughtful experience in teaching the subject.

*Elements of Steam and Gas Power Engineering.* By Audfey A. Potter and James P. Calderwood, both of Kansas State Agricultural College. McGraw-Hill Book Co., New York, 1920. Size 5½ x 8 in.; 304 pages; 225 illustrations; price \$2.50.

This is intended as a textbook for students taking their first course in steam and gas engines. As might be expected the first part deal with the fundamentals of power engineering; then it treats of fuels, combustion, steam boilers, steam engines, steam turbines, power plant testing, internal combustion engines, locomotives, and automobiles, trucks and tractors.

*Vocational-Cultural Reader.* By Benjamin F. Moore and Helene Edwards. D. C. Heath & Co., New York, 1920. Size 5x7 1-4 in.; 427 pages.

As stated by the authors in their preface, four fundamental ideas have guided in the selection of material for this book: (1) the necessity for a progressive system of reading providing regular advance from the sentence to the longer selection: (a) the advisability of a large amount of non-fiction in junior high school reading; (3) the wisdom of the use of selections on vocational subjects to correlate with the increased vocational work in public schools; (4) the necessary retention of classics that should be given to pupils early in life.

The book is divided into three parts; (a) selections for silent reading; (b) sight or vocational reading; (c) interpretative reading. The vocational reading is on such subjects as bread, vegetables, sugar, the forest, poultry, bees, etc. It includes "Building the House" by Thoreau and "Hunting the Grisly" by Theodore Roosevelt.

*Mrs. Wilson's Cook Book.* By Mrs. Mary A. Wilson, of Philadelphia. This is a book of nearly 500 pages containing numerous receipts for home and school use. Published by J. B. Lippincott & Co. Price, \$2.50 net.

*Aeronautical Book and Magazine List.* A convenient bibliography of books and magazine articles on air-craft. Published by the Director of Air Service, War Department, Washington, D. C.

# "YANKEE" Ratchet

## Multiplies Man's Power

"YANKEE" No 10

### Drives Screws Better---in Half the Time

ALL your effort counts when you use the "YANKEE" Ratchet Screw-driver. You don't lose half in the repeated grip-and-let-go of the ordinary screw-driver.

The "YANKEE" Ratchet relieves you of all that. Grasp the handle ONCE and twist back and forth—just like you wind your watch. You needn't change your grip till the screw is all the way home.

To draw screws, simply move the ratchet shifter to the back notch. A finger touch does it. To make driver rigid, put shifter at center notch.

Your  
Dealer  
Can  
Supply  
You

### "YANKEE" Ratchet Screw drivers

No. 10: made in sizes from 2 in. to 12 in. blade.

No. 11: same No. 10, except shifter, which moves across instead of parallel with tool.

No. 15: has handy Knurled Washer for starting small, wobbly screws with thumb and forefinger while hand steadies the driver. Diam. of blade 3-16 in. Sizes 2 in. to 8 in. blade.

Write for free "YANKEE" Tool Book showing most modern ways of drilling, tapping, boring and screw-driving.

North Bros. Mfg. Co.  
PHILADELPHIA

# "YANKEE" TOOLS

*Make Better Mechanics*





## FIELD NOTES—(Continued)

trade extension schools, 5 cities have part-time continuation schools, and 23 cities have evening trade extension schools. These figures are for the year 1919-1920.

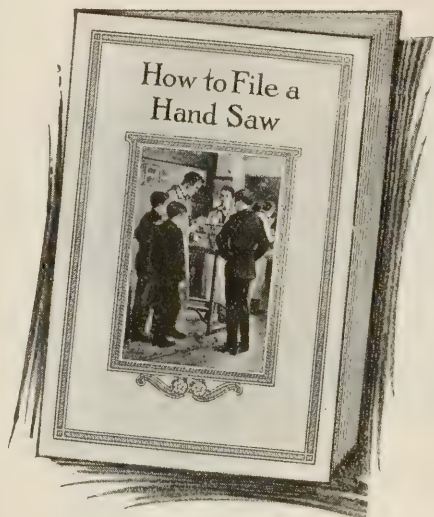
SOME SIGNIFICANT FACTS concerning the lumber supply of the future have been brought to light in a recent bulletin issued by the U. S. Forest Service entitled "Timber Depletion and the Answer" which is being sent out free, on request, by the U. S. Department of Agriculture.

Depletion of the timber supplies in the Eastern part of the United States has reached the point at which Eastern and even Southern markets are being invaded by West Coast lumber; hitherto barred by the high cost of transportation. The timber of the country as a whole is being used and destroyed four times as fast as new timber is growing, and the saw timber, the most valuable and most needed part of the stand, is being cut five and one-half times as fast as it is produced. More than 80,000,000 acres of land that should be growing timber is unproductive waste, much more is only partially productive, and fires are steadily causing further deterioration.

*Industrial Harmonizer* is the very appropriate name of an interesting magazine which is the official organ of the Bloedel Donovan Lumber Mills of Bellingham, Washington. In the September number of this magazine is an article describing the foreman training class being organized there by Professor Jensen of the University of Washington. This article which is written by the general superintendent contains a suggestion for all school men who undertake such a piece of work in an industry. It is in this sentence:

"Speaking of Jensen, when you come to know him you will agree with the foremen that he has given us a new idea of what a university "prof" is like, because he does not pose as knowing it all, but simply acts as the leader of the group in studying and analyzing the foreman's job with a view to making a better business team of the entire organization."

IT HAS BEEN THE POLICY of the State Board for Vocational Education in Illinois to encourage the establishment of continuation schools this year, tho the compulsory law does not go into effect until Sept. 1921, and to urge that the new work be started under the most favorable conditions possible. Due to this policy several cities and school districts have sought men of experience outside the state to start the work this fall, and have paid salaries sufficient to attract them.



## THIS BOOK FREE TO DIRECTORS

A remarkable book treating on the proper method of filing and keeping a hand saw in first-class shape has been published by the Simonds Manufacturing Co., "The Saw Makers", and is now ready for distribution. This book contains 16 pages. It gives more information on the subject in less words than was ever printed before; consists of 5 lessons and is suitable for class-room work. We desire to place copies of this book in the hands of every Woodworking Instructor or Supervisor, and will mail your copy free on receipt of your name and address. Write us today to

**Simonds Manufacturing Co.**

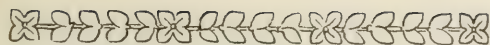
*"The Saw Makers"*

FITCHBURG, MASS.

5 Factories

12 Branches





## FIELD NOTES—(Continued)

THE EXPERIMENT of merging woodworking and cooking with playground work proved to be a success this past summer at Lowell, Mass. The trial was made in one school where Charles J. Rogers was the instructor in woodworking. It was a question whether the boys and girls who patronize the playground at such times as they please would voluntarily fit into a more definite shopwork program, but they did.

THE U. S. CIVIL SERVICE COMMISSION in Washington is still calling for more men to assist the Federal Board for Vocational Education in its rehabilitation work. The salaries offered grade "p" to \$3,000.

The board of trustees of the State College for Teachers at Albany have voted to transfer \$30,000 worth of mechanical equipment and five men from the faculty to the Buffalo State Normal School so that a new department of teacher training vocational work may be instituted there. The Buffalo Normal School already has considerable equipment which will be used for this work, and the state appropriation passed by the last legislature carries an additional \$18,000, which will be used for making an excellent selection of mechanical equipment to be used in this department.

IT HAS BEEN ANNOUNCED that Dr. John C. Merriman, dean of faculties of the University of California, has accepted an appointment as head of the Carnegie Institute of Technology at a salary of \$18,000 a year with four months' time allotted to his own personal research activities. Dr. Merriman has been a member of the California faculty for twenty-five years.

### MITER SAW BENCHES

The  
"Tannewitz"  
Universal  
Double Re-

volving Arbor Saw Bench with Sliding Table and Taper Pin Gauges is the only logical tool for the wood shop where frequent setting up is the rule and accuracy is the goal. Send for bulletin.

THE TANNEWITZ WORKS  
GRAND RAPIDS, MICH



SEND for new DESCRIPTIVE CATALOG of Grammar School, High School and College Text Books. A copy will be mailed on request.

THE MANUAL ARTS PRESS  
Peoria, Illinois

# SHOP APRONS

*Guaranteed*

Adjustable  
Neck  
Strap

Saves  
Many  
Times  
Their Cost



**The Apron You Can Buy  
with Confidence**

Standard  
Equipment  
In the  
Best Schools  
Everywhere

Instructors Apron free with first order

Price, White 75c

Price, Brown 80c

Delivery Same Day

Send no money—Just your order to

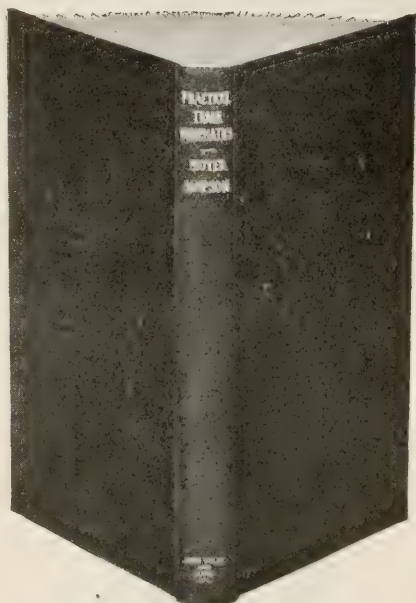
**CANVAS PRODUCTS  
CORPORATION**

19-21-23-E. McWilliams St.

School Dept.

FOND DU LAC, WISCONSIN

## Your Trade Mathematics Problem—Solved!



### *Moyer and Sampson's* **Practical Trade Mathematics**

Written to fill your greatest need right now—a real new teachable text on practical, or trade mathematics that will at once hold the interest of your students as well as teach them the practical, every-day mathematics of their particular trades.

It contains 200 pages, 4¾ by 7, made very clear by many figures, bound in cloth, price \$1.50.

Do not fail to examine this new Trade Mathematics—it costs nothing to look it over and *you'll find it is just what you have been looking for.* So use the coupon below and send for a copy now.

John Wiley & Sons, Inc., 432 Fourth Ave., N. Y. City.

You may send me the following on 10 days' approval:

#### **Moyer and Sampson's, Practical Trade Mathematics**

I agree to pay for the book or return it within 10 days of receipt.

Also please send me a copy of your Vocational News and put my name on your mailing list.

Name.....

School.....

Official Position.....

Address.....

MTM-10-20



## PERSONAL ITEMS

THE FEDERAL BOARD FOR VOCATIONAL EDUCATION has appointed R. T. Fisher of California to succeed Uel W. Lamkin as chief of the Division of Vocational Rehabilitation. As stated in an earlier issue Mr. Lamkin has been made director of the Board, taking the place formerly held by Dr. C. A. Prosser.

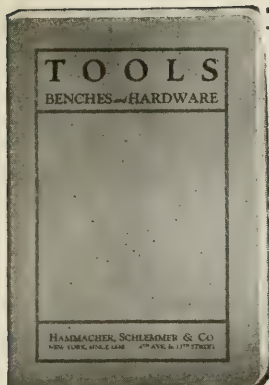
A. H. EDGERTON, director of industrial arts in the Lincoln School connected with Teachers College, New York City, has accepted an assistant professorship of vocational education at Indiana University. Professor Edgerton developed in this experimental school some very striking illustrations of the connections which might be established between the industrial arts and the old-line subjects.

VICTOR RANDEL, a graduate student of the University of Missouri, takes the place formerly occupied by Arthur B. Mays as head of the industrial work at the State Normal School at Huntsville, Texas. George B. Cox, a graduate of the University of Missouri in electrical engineering and formerly instructor in manual training at Orange, Texas, goes to Huntsville normal school as associate professor.

JOSEPH HANNA has been appointed assistant professor of education at Bradley Institute. Professor Hanna graduated at the State Normal School at Kirksville, Mo., taught in public schools for a while, studied at the University of Chicago where he received an A. M. degree, and then went to Pittsburgh, Pa., where he has been vocational counsellor under Assistant Superintendent Leavitt. He has also acted as special agent for the U. S. Department of Labor.

LAST WINTER Edward A. Reuther, who was assistant state supervisor of industrial education in New Jersey, was transferred to the directorship of work in continuation schools. To take his place R. A. Campbell of Edgewater, N. J., has been appointed. Mr. Campbell is a native of Pennsylvania, is a pattern maker by trade, having learned his trade in a shop in Troy, N. Y., and worked two years for the General Electric Co., at Schenectady. He has attended Cornell University and Teachers College, Columbia University, where he earned the special industrial arts certificate. For the past four years he has been the supervisor of manual training at Edgewater.

W. E. ALLEY, assistant in the mechanical engineering laboratory at the University of Illinois, has accepted a position at Bradley Institute where he will be the instructor in machine shop work, taking the place of W. F. Raymond who has resigned to accept a position in a large manufacturing establish-



# GOOD TOOLS

Are Essential For

## GOOD WORK

Since 1848 we have adhered to one policy.  
To handle only the very best in quality.

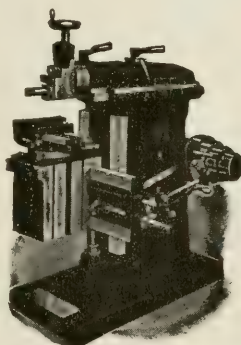
Our new Catalog No. 208 of over 300 pages is of particular value to those interested in VOCATIONAL TRAINING.  
Copy upon request.

## Hammacher Schlemmer & Co.

HARDWARE TOOLS AND SUPPLIES

NEW YORK, Since 1848

4th Ave. and 13th St.

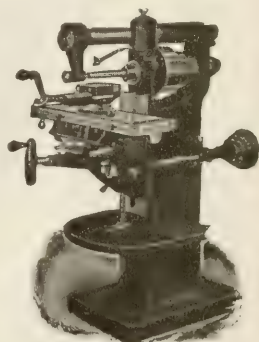


## Time and Money is Wasted

very often by the purchase of tools not adapted to the work. You would not think of putting a 32 in. lathe in your school room on account of the high first cost, and it is not adapted to your work. You can put two 16 in. lathes or more in the same space and you can buy two or three machines for the cost of the larger one. Apply that same principle to your milling machines and buy **STEPTOE** small power feed or hand millers, a machine especially adapted to school room work.

## A STEPTOE SHAPER

should be your first consideration in equipping your machine shop. Large pieces can be planed on a planer, but small parts should be put on a shaper. The simplicity of design of **STEPTOE SHAPERS** means ease of operation and a consequent saving in repair bills.



## JOHN STEPTOE CO.

Northside

Cincinnati, O.



## V. & B. TOOLS

All Patterns of Hammers, Braces,  
Pincers, Punches, Nail Set,  
and Small Tools



NAIL HAMMER

Every V. & B. Tool is individually  
tempered and tested.

We will gladly send copy of our  
catalogue and circulars of interest to  
students.

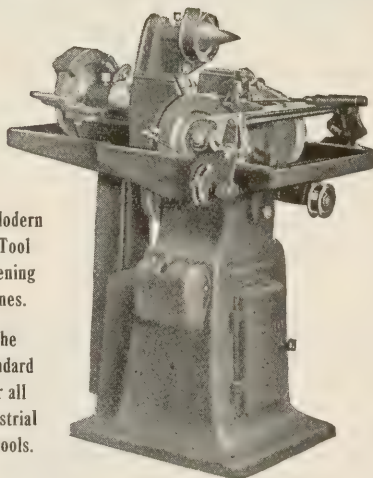
V. & B. Tools are sold by all leading  
Hardware and Supply Dealers.

**VAUGHAN & BUSHNELL MFG. CO.**

Makers of Fine Tools

**CHICAGO**

## Mummert-Dixon Oilstone Grinders



The Modern  
Edge Tool  
Sharpening  
Machines.

The  
Standard  
for all  
Industrial  
Schools.

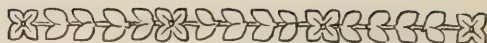
No. 481—Motor or Countershaft Drive  
An automatic attachment for grinding long knives can  
be furnished with this machine.

### THE FIVE LEADING FEATURES:

- 1 Coarse Oilstone Wheel, 3 Grinding Cone
- 2 Fine Oilstone Wheel, 4 Leather Wheel
- 5 Emery Wheel. All at your finger's ends

Send for full descriptive bulletin

**MUMMERT-DIXON CO., Hanover, Pa.**



## PERSONAL ITEMS (Continued)

ment. Mr. Alley has had practical experience as a  
machinist, two years of the engineering course,  
teacher-training work under Professor Griffith, and  
experience as machanician at the University.

THE SCHOOL OF ENGINEERING of The Pennsyl-  
vania State College has engaged J. L. Folker, as  
instructor in the Department of Vocational Teacher  
Training. Mr. Folker was educated in the public  
school of Philadelphia and is a graduate of the  
Northeast Manual Training High School of that  
city and of the Philadelphia Industrial Art School,  
with one year post graduate work at the latter  
institution. His pedagogical training was secured  
at: Millersville State Normal School, School of  
Practical Arts, Teachers' College of Columbia Uni-  
versity and the department of which he will become  
a member.

Mr. Folker's vocational experience comprises a  
number of years in varied lines of work, and in-  
cludes technical editorial work, shop experience in  
wood trades, metal trades, electric repairing and  
installing, and printing, and he has also been en-  
gaged in building construction, both as employer  
and employee.

After one year as assistant director of manual  
training in the public school of Lebanon, Pa., Mr.  
Folker went to Steelton as director of manual and  
industrial training, and installed the equipment and  
organized the courses in the shops there. He also  
designed and equipped the Steelton Home School,  
the first of its kind in Pennsylvania.

EARL E. ROSENBERRY, who has been studying  
under Professor Dean at Teachers College, has  
accepted an unusual opportunity in the develop-  
ment of part-time work in the State of Arizona. His  
work began September 1st.

PROFESSOR TAYLOR of State College of Pennsyl-  
vania has been promoted from a position of local  
teacher-training to a state position where he will  
have full charge of the training of vocational  
teachers.

PROFESSOR STRUCK of Pennsylvania State College  
has been made assistant to L. H. Dennis as the one  
in charge of industrial education in the State.

H. O. WOODWARD, a practicing plumber of Cham-  
paign, Ill., has gone to Maryland, N. Y., to take  
charge of a school of agriculture. He is a graduate  
of the University of Illinois in Agriculture.

P. RIBMAN, formerly assistant in the forge shop  
at the University of Illinois, is now instructor in  
forging in the War College at Camp Taylor.

EUGENE C. GRAHAM, formerly supervisor of in-  
dustrial education in Evansville, Ind., is now in  
charge of the Evansville branch of the Cincinnati

# MAYDOLE HAMMERS



Adze Eye  
Nail Hammer



Machinists'  
Hammer



Blacksmiths'  
Hammer



Copperworkers'  
Hammer



Adze Eye  
B. F. Hammer

JUST A FEW OF OUR HAMMERS

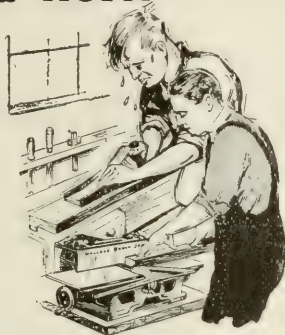
All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request

THE DAVID MAYDOLE HAMMER CO.

NORWICH, N. Y.

## Save the Hand Work



The modern shop is equipped with portable bench machines which go to the work, making it unnecessary to walk to the big machines with each job of cutting, trimming or jointing.

Heretofore, it was necessary to do a greater part of the work by hand because it was either too dangerous to do the work on larger machines or it was too tedious an operation. Dangerous or tedious operations are slow, therefore costly.

Now these modern shops have Wallace Bench Planers, Jointers and Saws on the benches—at the elbows of the men. These machines are portable and operate on the electric light circuit and have ample power for the job.

## J. D. WALLACE & CO.

1408 West Jackson Blvd.

Chicago



TAKE THE  
MACHINE TO  
THE JOB—  
INSTEAD OF  
THE JOB TO  
THE  
MACHINE—  
SAVE  
WASTED  
STEPS—  
SAVE HAND  
WORK

## Cushions, Spring Seats Upholstering Supplies

We issue price list which also contains valuable information for Instructors in Manual Arts.

It is free—write for it.

DODGE-DICKINSON CO.

Bloomington, Illinois

## "Jorgensen"

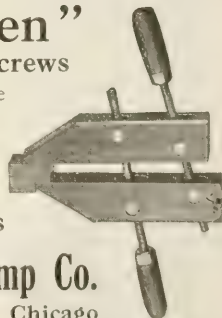
Peerless Hand Screws

are not only Adjustable  
but excel on ordinary  
straight work

Steel Spindles  
Steel Nuts  
Hard Maple Jaws

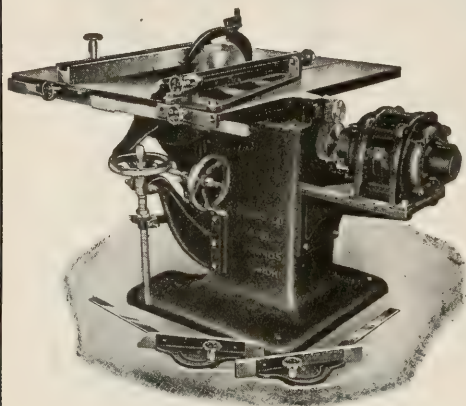
## Adjustable Clamp Co.

216 N. Jefferson St., Chicago



# SAW TABLES

## For MANUAL TRAINING

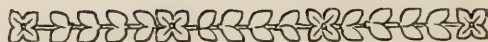


This cut shows our motor driven spiral gear saw table. No countershaft, no belts. Tilting or stationary tops. Write for circular and prices on our entire line. Address

**ALEXANDER DODDS CO.**

451-453 Monroe Ave., N.W.

GRAND RAPIDS, MICHIGAN, U. S. A.



### PERSONAL ITEMS (Continued)

District of the Federal Board for Vocational Education.

W. D. HIFNER has accepted a position in the manual training department of the Northeast High School of Kansas City, Mo. For the past fourteen years Mr. Hifner has been supervisor of manual training at Independence, Mo., and for seven years more he has been connected with the school system there.

HAROLD DIEMER, formerly director of vocational education at Calumet, Mich., has become the assistant principal and director of continuation school work at the township high school at Joliet, Ill.

WILL C. ROBB, formerly principal of the Spring Valley township high school, is to be the assistant principal in charge of continuation school work at the township high school at Cicero, Ill.

L. R. STANFIELD, for the past ten years in charge of the manual arts work in the public schools of Waco, Texas, is now in charge of the Mechanic Arts instruction at the North Dakota State Normal and Training School, Ellendale, N. D.

EDWARD G. ANDERSON, editorial representative of this Magazine in the Northwest, has left his position at the State Normal School at Ellensburg, Wash., to become superintendent of public schools at Asotin, Wash.

ERNEST STATLER, a graduate of the four-year course at Bradley Institute, goes to Akron, Ohio, this year to teach woodworking.

WILLIAM JUILLERAT, a graduate of Bradley, has accepted a position as teacher in Saginaw, Mich.

F. J. HARBST, of Cleveland, is to specialize his efforts this year in developing a course in general metal-work for junior high schools.

J. GRENNAN, formerly assistant superintendent of the foundry at the University of Illinois, has become an instructor in the War College at Camp Grant.

E. S. FRENCH, formerly superintendent of the print shop at the University of Illinois, is now expert in printing for the War College and is stationed at Washington, D. C.

G. BOARDMAN EDWARDS of Seattle, Wash., has been appointed state director of vocational education in Montana. Mr. Edwards formerly lived in North Beverly, Mass.

L. H. LEHMAN has left St. Charles, Minn., to take charge of the industrial arts work at Red Wing, Minn.

A. M. LINDEMAN is now teacher of Manual Training at Alief, Texas. He was formerly located at Cost, Gonzales County, Texas.

E. O. THOMAS, formerly of Kansas City, is in charge of work in Industrial Arts at the C. A. and N. University, Langston, Oklahoma.

The largest selling Quality Pencil in the world



# VENUS

## PENCILS

ARTISTS and art students the world over find VENUS supreme for the fine line work of decoration or for quick rugged sketching.

17 black degrees, 2 copying

For bold heavy lines  
6B-5B-4B-3B

For general writing  
and sketching  
2B-B-HB-F-H

For clean fine lines  
2H-3H-4H-5H-6H

For delicate thin lines  
7H-8H-9H

Plain Ends, per doz., \$1.00  
Rubber Ends, per doz., 1.20

American Lead Pencil Co.  
219 Fifth Avenue  
Dept. A New York





*Schools Alliance Ohio Making Furniture on*  
**"Oliver" Woodworking Machinery**

Buy "Oliver" Equipment and the Instructors will spend their time Instructing,  
 instead of "fixing-up" the machinery.

**OLIVER MACHINERY CO.**  
 Grand Rapids, Mich., U. S. A.

**IMMEDIATE  
 DELIVERY ON**



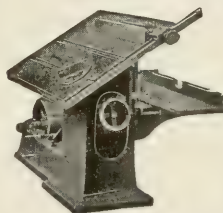
**Drawing  
 Instrument Sets**

WRITE FOR CATALOG AND  
 PRICE LIST TODAY.

DO NOT DELAY YOUR ORDERS—  
 SUPPLY LIMITED.

**FREDERICK POST COMPANY**

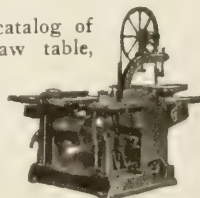
Dependable Supplies for  
 Engineers, Architects and Schools.  
**CHICAGO**



**Crescent  
 Wood  
 Working  
 Machines**

are the tools your students will  
 eventually use so give them the  
 opportunity now of learning  
 about this splendid line of wood  
 working machinery.

Send today for our catalog of  
 band saws, jointers, saw table,  
 shapers, variety wood  
 workers, planers, planers  
 and matchers, cut off  
 saws, disk grinders, bor-  
 ers, hollow chisel mort-  
 isers, Universal wood  
 workers.



**The Crescent Machine Co.**

**46 CHERRY ST.**

**LEETONIA, OHIO**

# TOYS

## THE NOVEMBER NUMBER OF THE MANUAL TRAINING MAGAZINE

WILL GIVE CONSIDERABLE EM-  
PHASIS TO TOYS AND  
TOY-MAKING

Teachers looking for new ideas and designs in toys and toy-making will do well to watch for the early publication of two new books:

### Educational Toys

BY LOUIS C. PETERSEN

### Toy Pattern Sheets

BY MICHAEL C. DANK

"Educational Toys" contains an exceptional collection of toys of special interest to boys and girls. These toys have been designed and selected thru years of teaching toy-making. They "excite and sustain interest;" are "within the child's power;" "possess educational value;" are "adapted to light wood construction;" and "conform to class-room conditions." In addition to working and perspective drawings of each toy this book tells about tools and materials needed, just how to make each piece and how to finish each to make it attractive.

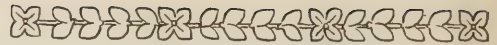
"Toy Pattern Sheets" consists of sheets of drawings of selected toys, including seven varieties. The drawings are full size and adapted to be traced, in effect patterns to work from. The twelve sheets size  $9\frac{3}{4} \times 11\frac{3}{4}$ " are enclosed in an attractive and colored folder.

Full and complete announcement of these valuable publications will appear in the November issue of the *Manual Training Magazine*.

#### OTHER TOY BOOKS

Manual Training Toys—Moore. For the Boy's Workshop.....\$1.50  
The Construction and Flying of Kites—Miller ..... .25  
Kitecraft and Kite Tournaments—Miller. Complete, comprehensive and authoritative ..... 1.75  
Bird Houses Boys can build—Siepert. Bird Houses, feeders, accessories, etc. Of rare interest to boys..... .65

**THE MANUAL ARTS PRESS**  
PEORIA, ILLINOIS



## TRADE NOTES

TEACHERS of mechanical drawing having difficulty in the satisfactory handling of tracing cloth will be glad to learn that the National Tracing Cloth Company of Saylesville, Rhode Island, render a special service by cutting their tracing cloth to size desired without added cost. This plan of having cloth cut to your "standard" sizes will eliminate waste of time and cloth and will be recognized by the teacher of large classes as a decided convenience.

A RECENTLY published booklet of interest to wood shop teachers is entitled "Monite Waterproof Glue" published by the Casein Glue Mfg. Co., 136 West Lake St., Chicago, Ill. The booklet covers "description," "special properties," "varieties," "tests" and "general directions for using." A list is given of the bulletins issued by the Forest Products Laboratory giving exhaustive details of tests conducted, and which are recommended to the glue student.

AMONG RECENT bulletins and booklets there is one publication which will be of interest to readers of the *Manual Training Magazine*. It is "Modern, Scientific Methods in Belt Joining" issued by the Service Department of the Crescent Belt Fastener Company.

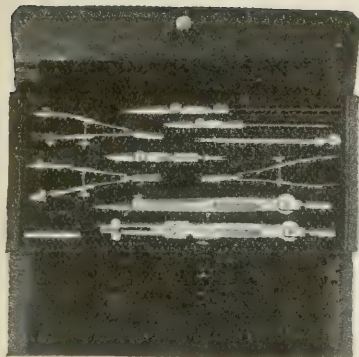
Teachers who buy belting today or who have made an investment in belting have a commodity which can only be replaced with delay, difficulty and considerable expense, and the continuous performance of which is essential.

One of the biggest problems the belt user has to face is that of joining the belt in a way which preserves its strength and insures its longest and most satisfactory service.

Obviously, no belt can give better service than its joint will permit, and if destructive methods are employed which punch out valuable belting material or weaken the length-wise, power-carrying belt fibers, the service and the life of the belt are impaired.

This new Crescent circular entitled "Modern Scientific Methods in Belt Joining" contains practical belt-joining data. This information is of permanent value to anyone interested in belt upkeep and it is so designed, that when opened up and tacked to a wall, it presents on one page full information for joining the belt to insure its best service under all conditions of work:

The instructions as to how to make belt joints which retain the belt's full strength and assure its longest life are given in simple and concise language and are amply illustrated. The larger illustrations show in full size the outside and pulley sides of



## Mechanical Drawing Outfits

Set as Per Photo, \$6.00

We have 300 sets to offer at the above price. Send in your order now—so you will get them at this price. All solid nickel silver and steel construction. Save 200 per cent and order to-day.

**National Instrument Company**

4517 North Lawndale Ave. Dept. C

CHICAGO, ILL.

Crescent joints. A cross section illustration shows how a belt can be joined without weakening it in any way, and is a vivid demonstration of how the Crescent method retains the full strength of the belt and actually reinforces it. It also shows how the Crescent method avoids metal coming in contact with the pulley and thereby eliminates noise, wear and crystallization.

Copies will be sent to any of the readers of the Manual Training Magazine to whom it may be of interest. Address Educational Service Department of Crescent Belt Fastener Company, 381 Fourth Avenue, New York.

CATALOG No. 700, "Fan System of Heating, Ventilating and Humidifying," has recently been published by the Buffalo Forge Company. This publication is the most efficient catalog of its kind that has ever been produced by this company and is for all practical purposes a hand book on heating and ventilating inasmuch as it is taken to a great extent from their Handbook on Heating and Ventilating, which is so popular among heating and ventilating engineers in all parts of the country.

Among many types of buildings attention is given to school buildings including several of the finest high schools in the country which have been equipped by this company.

*Hack Saws and Their Use* is the title of a valuable pamphlet of 63 pages being distributed by The L. S. Starrett Co., Athol, Mass.

## Build Your Own PHONOGRAPH

Instructive—arouses pupils' enthusiasm—provides one of the best problems in cabinet making.

Let Your Pupils Build Choraleon Phonographs

We furnish, plans, blue prints, motors, tone arms, case material—in fact, everything required. Full instructions. Choraleon's have fine tone. Play any record.. Ask for particulars



**CHORALEON PHONOGRAPH CO.**  
920 7th St., Elkhart Ind.

## Tools for Sheet Metal Work

Manual training, vocational and technical schools are invited to communicate with us regarding equipment of shops for sheet metal work, the importance of which is constantly increasing, owing to the popularity of sheet metal as a substitute for other materials.

Ask for catalog M T 56.

**NIAGARA MACHINE AND TOOL WORKS**  
BUFFALO, N. Y.

Manufacturers of  
MACHINERY FOR WORKING SHEET METALS

## BLACK WALNUT

For Turning, Carving and  
Cabinet Making.

STUDENTS.

Write for price list of special combination assortments, packed ready for shipment by Parcel Post or Express.

## MANUAL TRAINING SCHOOLS

Order your Black Walnut for Carving, Turning and Cabinet Making from

**FRANK R. PORTER & CO.**

500 THIRD STREET NORTHWEST WASHINGTON, D. C.

Our Price List forwarded promptly upon request.

## LETTERING CARD—By E. S. Maclin

A card of alphabets. Shows Gothic capital and small letters both straight and slant. Printed on bristol, size 4" x 8". In packets of 10. Per packet, 35 cents.

**THE MANUAL ARTS PRESS,**

Peoria, Illinois





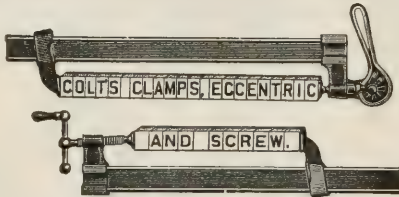
Jacksonville, Florida takes three of our candidates for Manual Arts work. Have sent our members to good cities in all parts of the country. Fine emergency positions open. Write for details.

**SPECIALISTS'** **ODEON BUILDING**  
**EDUCATIONAL BUREAU** **ST. LOUIS, MO.**  
 Branch Office, Berkeley, Cal.

## TOOLS

For Manual Training Shops.  
 Send your inquiries to and get the especially low prices quoted by

**MONTGOMERY & CO. Inc.,**  
 105 Fulton Street New York City



Forty styles of Quick Acting Clamps for the Worker in Wood, Cement and in the trades generally.

Your dealer will supply you.  
 Ask for catalog No. 296.

**BATAVIA CLAMP CO.**  
 237 Center Street BATAVIA, N. Y.

## BOOKS FOR TEACHERS

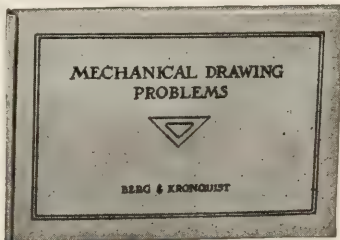
**Furniture Upholstery**—Johnson. The only text and reference book on Upholstery written for school use. Contains detailed, practical instructions telling how to upholster a variety of articles, also how to re-upholster old furniture and how to do spring-edge upholstery work. Describes necessary tools and materials. Abundantly and beautifully illustrated. \$1.25.

**Seat Weaving**—Perry. A handbook telling how to cane chairs, how to use cane webbing, how to do rush seating, how to do reed and splint weaving, how to make seats of reeds and splints, how to prepare raw materials, how to stain, finish and re-finish, etc. Also treats of the use of cane and other seating materials as a decorative element in furniture construction. Well illustrated, practical and authoritative. \$1.25.

**Blue Printing**—Friese. Treats of the planning of rooms and equipment for mechanical drawing and blue-printing. Presents desirable floor plans for both electric and sunlight printing, and describes apparatus. Covers the various papers including process of sensitizing, tells how to make blue prints and a variety of special prints, including Vandyke negatives, black-line and blue-line prints. 85 cents.

**The Manual Arts Press** **Peoria, Ill.**

Your Instruction in Mechanical Drawing is no stronger than your course of problems.



## MECHANICAL DRAWING PROBLEMS

By EDWARD BERG and EMIL F. KRONQUIST

Instructors, Washington High School, Milwaukee, Wis.

**THEY TELL THE STORY OF WHAT TO DO ALMOST AT A GLANCE**

**128** Full-page plates thoroly covering the underlying principles of drafting and their practical applications. The problems have been most skilfully chosen and admirably presented. As a drawing text it will make draftsmen of 100% of the class, with a minimum of effort and time of the student and teacher. It is a broad treatment as shown by the following brief summary of subjects covered.

Working Drawings  
 Mechanical and Architectural Lettering  
 Drafting Technique  
 Projection and Developments  
 Furniture Drawing  
 Sheet Metal Drawing

Machine Drawing  
 Architectural Drawing  
 Structural Drawing  
 Bench Projects  
 Machine Parts  
 Castings and Forgings  
 Cast Iron Pipes  
 Sheet Metal Devices

Art Metal and Wooden Furniture  
 Building Details  
 Summer Cottage, Garage  
 Steel Details, Etc.

*Billed "on approval" to any teacher of mechanical drawing, Price \$1.28*

**THE MANUAL ARTS PRESS, PEORIA, ILLINOIS**

## BOOK NOTES

THIS year The Manual Arts Press is making an effort to supply teachers of shopwork and drawing with several little conveniences that facilitate instruction. First in this list is the *Bill of Materials*, announced several months ago. This already has met with a hearty response. Last month announcement was made of a very convenient *Lettering Card* by E. S. Maclin, industrial supervisor in the State of Tennessee. This month there is being added to this list two new pads of lettering paper and a very handy lumber table especially designed to meet school needs.

Both of the *Lettering Pads* have ruled lines printed in light blue. One pad is for vertical lettering, and the other for inclined. The pad for vertical lettering is ruled so as to be useful for several sizes of letters. It is, perhaps, especially convenient for use in supplementary drill work in connection with Bennett's *Grammar Grade Problems in Mechanical Drawing*, but is well adapted to any style of vertical lettering. The pad for inclined lettering has inclined lines a half inch apart on the upper third of the sheet, and points marked at the bottom so that these inclined lines can be extended by the student if he needs to do so. For most purposes, however, this should not be done. Each pad contains 15 sheets and is gummed at the bottom edge only.

The lumber table is known as *Densmore's Handy Lumber Table* designed by J. W. Densmore of Sioux City, Iowa.

Its purpose is to enable a student or teacher to find in the shortest possible time the number of board feet in any piece of board or timber containing more than one board foot and up to 32 board feet. The table is printed on a large sheet for framing or otherwise fastening to the wall for convenient reference. It may be used for widths by half inches up to 4 and then by inches to 24. Lengths are given in inches from 1 to 72, and then by feet to 16 ft. The results are given in feet and two-place decimals.

This will be a great convenience to any teacher in either checking up the figures of pupils or in directly determining items of value of lumber used.

A MANUAL ARTS TEACHER of many years' experience was in our office the other day looking over the latest books (we always have such in our library convenient for visitors) when he saw *Elementary Machine Shop Practice* by Palmateer. Immediately after looking it over he said, "Now, I think that is just what is wanted in many places"

They don't want so much as was in that big red book you used to sell, but they do want something." The evidence seems to be accumulating that Mr. Palmateer has been fortunate in his selection of material for such a textbook and that he has presented it in convenient form for practical use. Of course, the fact is, that the book is the result of years of sifting and adding and then adding and sifting thru experience in teaching.

SOME OF THE MEN coming from the factories do not appreciate the value of a textbook—chiefly because they don't know how to use one. They are apt to think that to use a textbook in a class is a reflection upon their knowledge of the subject. They do not understand that the textbook is merely a device for "putting over" ideas more rapidly and more surely than can be done by the teacher alone. Textbooks rightly used multiply the effective teaching in a class, especially a large class, by a large factor. The right textbook used in the right way is a time and energy saver for both teacher and pupil. Any experienced teacher knows that after he has told the whole story (as some do, or try to) in a demonstration he is obliged to repeat the fundamental parts of it over and over again to individuals. If the textbook can relieve him of a part of this it is not only relieving him just where he needs relief, but it is saving the time of the student who otherwise would have to wait for his turn at the teacher. Much of the fooling and visiting in shop classes comes from waiting to ask the teacher a question. After a while some of this waiting may be merely an excuse, but if the pupil has the answer in an open textbook at his side there is no legitimate excuse for waiting.

THE SEVENTEENTH edition of *Essentials of Woodworking* by Griffith has just been printed. This is evidence that a real textbook is appreciated by many teachers. A new edition of *Woodwork for Secondary Schools* by Griffith is being required to supply the fall orders. This book, also is taking a strong place among the very best textbooks on the manual arts.

JUST as we go to press a new book on Vocational Training has arrived. This is *Introduction to Vocational Education* by Dr. David Spence Hill, president of the State University of New Mexico. The sub-title is, "A Statement of Facts and Principles Related to the Vocational Aspects of Education Below College Grade." It is published by The MacMillan Co.



Columbus Trade School, Columbus, Ohio

# PRINTING

## As a Prevocational Subject

**P**RINTING combines virtually all the desirable features that are required of the ideal manual activity in education. Printing is an art in which the raw materials are words—words of all languages—requiring in its finished product a utilization of the principles of nearly all academic studies. Included in these studies are grammar, reading, spelling, punctuation, word division and capitalization.

Printing is a manual activity that dovetails in with nearly all educational devices, yet it provides an opportunity of teaching the technical processes of an art in which the opportunities for employment are unlimited.

## As a Vocational Subject

**T**HE Printing Industry needs workers—competent and well-trained men in all branches of the industry. This situation offers a splendid opportunity for schools to train direct for an industry which ranks fifth in importance in the United States. Employers and employees are fully alive to the seriousness of the shortage of workmen in the printing and allied industries and probably would welcome a suggestion to co-operate in apprentice education. Several schools are now furnishing education in printing. Information regarding these schools and suggestions regarding co-operation between educators and the printing industry will be sent on request.

EDUCATION DEPARTMENT

## AMERICAN TYPE FOUNDERS COMPANY

300 Communipaw Avenue, Jersey City, New Jersey

Set in Century Schoolbook type—appropriate for school printing purposes.



# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.

WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City.

EDITORS FRANK M. LEAVITT Associate Superintendent Public Schools, Pittsburgh, Pa.

WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON.

Published monthly by The Manual Arts Press, 237 N. Monroe St. Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

## CONTENTS

AN APPLICATION OF THE PROJECT METHOD.....	J. H. Trybom	129
PROBLEMS IN VOCATIONAL ADVISEMENT AND COUNSELING .....	Leonard W. Wahlstrom	134
TOY-MAKING AS A COMMUNITY PROJECT (Illustrated).....	E. E. Ericson	138
TOY-MAKING IN THE SCHOOLS (Illustrated).....	Michael C. Dank	141
PHOTOGRAPHS FROM EVERYWHERE.....		144
St. Charles, Mo.; Boston, Mass.; Grafton, W. Va.; Denton, Texas.		
EDITORIAL REVIEW FOR THE MONTH.....		146
Toy-making—A Smith-Hughes General Industrial School in Ohio—The New York Federation of Labor and the Educational Foundations—A Twenty-day Round Table—Frederick H. Evans succeeds Professor R. W. Selvidge in Army Work— From the English Viewpoint—Vocational Education and the Progress of Inven- tion—The Intensive Plan.		
A POINT OF VIEW.....	Arthur Dean	153
WASHINGTON CORRESPONDENCE.....	William T. Bowden	155
Retirement Legislation becomes Effective—Changes in the Federal Board—New Home of the National Education Association.		
IN FOREIGN COUNTRIES.....		157
Deaths of three Pioneers in England—Sir Robert Blair's Estimate of Manual Training.		
PROJECTS, PROBLEMS AND NOTES.....		159
Toys—Woodworking Projects—The Cold Chisel that Will Stand—An Elementary Project in Metalwork—End Vise Brace—Machinists' Tool Box—Play-Ground Apparatus—How to Distinguish Mahogany and Walnut from Red Gum.		
CURRENT PUBLICATIONS.....		168
FIELD NOTES		
In California—Industrial Rehabilitation, Charles L. Jacobs.....IV		
Around New York, W. H. Dooley.....VI		
Foreman Training at Oswego.....X		
From the Southwest, E. E. Ericson.....XII		
PERSONAL ITEMS.....		XXVIII
TRADE NOTES.....		XXXI
BOOK NOTES.....		XXXVII

*This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.*

Entered at the Post Office at Peoria as Second-Class Matter. Copyright, 1920, The Manual Arts Press.

## FIELD NOTES

### IN CALIFORNIA

CALIFORNIA was favored last month (August) by the presence in San Francisco, of many persons from various parts of the United States and foreign countries, interested in industrial accident prevention and insurance. What brought them together was the seventh annual meeting of the International Association of Industrial Accident Boards and Commissions.

The one evening meeting which the convention had was devoted to the subject of "Industrial Rehabilitation." The program for that evening covered a discussion of, primarily, three main topics. One of these was the all-important topic pertaining to the relations which should exist within the State Industrial Accident Commission or Board, and the Vocational Education Board of each state, which two bodies, by provision of the Federal Industrial Rehabilitation Act, approved by the President last June, are to cooperate in administering the rehabilitation work. A second topic concerned what the activities of the state in relation to rehabilitation should be. And the third topic related to how the state activity should be carried out.

One of the principal speakers of the evening was Mr. L. S. Hawkins, chief of the Division of Vocational Education of the Federal Board of Vocational Education. As the Federal Board of Vocational Education is the federal agency charged with the duty of seeing that the Rehabilitation Act is administered by the various states in accordance with the provisions of the Act, it was fitting that Mr. Hawkins should present a paper outlining the aim and scope of the Act and giving the duties of the State in conforming with the provisions of the Act. He dwelt, also, on some of the more important matters not specifically in the Act itself, which in its attempting to apply the Act, the State will have to consider. Mr. Hawkins showed that, while the Act was known as the Industrial Rehabilitation Act, and the idea of rehabilitating persons who had suffered by permanent partial disabilities grew, largely, out of the problems of industrial accident insurance, the Act has a much broader application than that which its title or its origin would lead one to suspect. The Act, he stated, provided, in the words of the measure itself, that "the term person or persons disabled shall be construed to mean any persons who, by reason of a physical defect or infirmity, whether congenital or acquired by accident, injury, or disease, or may be expected to be, totally or partially incapacitated for remunerative occupations." In simple language than, it appears that the Act is sufficiently comprehensive to cover every

form of vocational retraining which may be necessary to return an incapacitated person to civil employment.

Summarizing the problem of each state, Mr. Hawkins gave it as follows:

1. To get in touch with the possible beneficiaries under the act.
2. To determine those who are eligible to the benefits of the act and award training.
3. To provide a systematic method of personal advisement to prospective beneficiaries.
4. To provide suitable training for those who accept the award.
5. To continuously advise and supervise all cases thru training, including placement.

One point upon which the speaker laid special stress was the importance of having one man assigned to each case of disability; this man to follow the case thru from advisement and training to placement, and even the follow-up work thereafter. The latter phase of the work, it was stated, may be continued until there is assurance that the injured man is satisfactorily reinstated into the vocational world.

One further point upon which the speaker laid stress was the importance of training. "on the job;" or, if training was given in a school, it should not be of a formal character, but rather "job preparation."

Another speaker on the program whose paper in large part is of special interest to persons concerned with the training aspect of vocational rehabilitation, was Oscar M. Sullivan, director of reeducation of the Minnesota Department of Education. Mr. Sullivan stated that the Minnesota Board of Education considered the rehabilitation work of sufficient difficulty and importance to warrant the employment of a state director of vocational rehabilitation other than the regular vocational director. He pointed out that after considering the various methods of rehabilitation, the Minnesota Board came to the conclusion that the best way of treating disabled persons who are to be re-entered in industry is to treat each as an individual to be cared for separately by individual study, contracts and schooling, until rehabilitation has been completed.

Mr. Sullivan revealed the surprising fact that out of every five who are eligible for training, it is not unusual to find but one willing to undertake training immediately; and he added that some who are interviewed and worked with for a considerable time, will in the end, refuse to accept the proffered education. Others who prove amenable to the advise of the reeducation agent, will postpone the



Columbus Trade School, Columbus, Ohio

# PRINTING

## As a Prevocational Subject

PRINTING combines virtually all the desirable features that are required of the ideal manual activity in education. Printing is an art in which the raw materials are words—words of all languages—requiring in its finished product a utilization of the principles of nearly all academic studies. Included in these studies are grammar, reading, spelling, punctuation, word division and capitalization.

Printing is a manual activity that dovetails in with nearly all educational devices, yet it provides an opportunity of teaching the technical processes of an art in which the opportunities for employment are unlimited.

## As a Vocational Subject

THE Printing Industry needs workers—competent and well-trained men in all branches of the industry. This situation offers a splendid opportunity for schools to train direct for an industry which ranks fifth in importance in the United States. Employers and employees are fully alive to the seriousness of the shortage of workmen in the printing and allied industries and probably would welcome a suggestion to co-operate in apprentice education. Several schools are now furnishing education in printing. Information regarding these schools and suggestions regarding co-operation between educators and the printing industry will be sent on request.

EDUCATION DEPARTMENT

## AMERICAN TYPE FOUNDERS COMPANY

300 Communipaw Avenue, Jersey City, New Jersey

Set in Century Schoolbook type—appropriate for school printing purposes.





## FIELD NOTES—(Continued)

beginning of training. This speaker emphasized the fact that for the present, and for some time to come, research work must be a very important phase of the activities of rehabilitation agencies; for he sees that a great deal of valuable information will be secured in the course of the early rehabilitation work in the ordinary operations of the service.

To show what could be done by retaining, a demonstration by movie and in personal exhibition was given of the ability of Mr. Schunk, an employee of the California Industrial Accident Board. Mr. Schunk is without hands, both having been shot off in a gun accident when he was but fifteen years of age. His writing and wood-turning which were exhibited would do credit to anyone less unfortunate. No one in the Industrial Accident Board's employ, so the president of the Board told us, could lay claim to better penmanship than this handless employee.

The evening, on the whole, was pregnant with interest for persons concerned in manual training, industrial education and trade instruction. The discussions left the feeling that the work of rehabilitation is yet in its infancy, that vocational retraining is a field for educational pioneers, and that existing lines of manual work in school may expect to be profited by the discoveries evolving out of efforts in this new line of manual education.

CHARLES L. JACOBS,

### AROUND NEW YORK

THE new Cooperative High School opened Monday, Sept. 13, with approximately 1,000 pupils. The faculty includes the fourteen coordinators, who have been in charge of the cooperative classes in the individual high schools for the past few years, and eleven additional teachers of special subjects, making a faculty of twenty-five.

All cooperative classes in the various high schools are to be discontinued according to present plans, and the pupils transferred to the new school.

At the close of school in June there were 1,250 cooperative students registered in the eleven high schools, which had a course of this kind. As the plans of having a separate and distinct cooperative school were formed during the summer, there was no way of estimating the number that would register, and for this reason the plans for the organization and furnishing of the school were somewhat retarded.

Some are of the opinion that the continuation school law will cause many children to attend a cooperative course in place of the evening courses thruout the city.

THE NEW YORK Vocational Teachers' Council held its regular meeting at the Washington Irving High School on Friday, Sept. 17. A cordial invitation was extended to all teachers of trade subjects, sciences and mathematics in the vocational, pre-vocational, continuation and evening schools.

President Paul Augustine presented an interesting flashlight description of the New York State Federation of Labor in convention at Binghamton last month. The housing question and its answer for vocational teachers was discussed. The council is ever ready to help solve the educational and economic problems of its members.

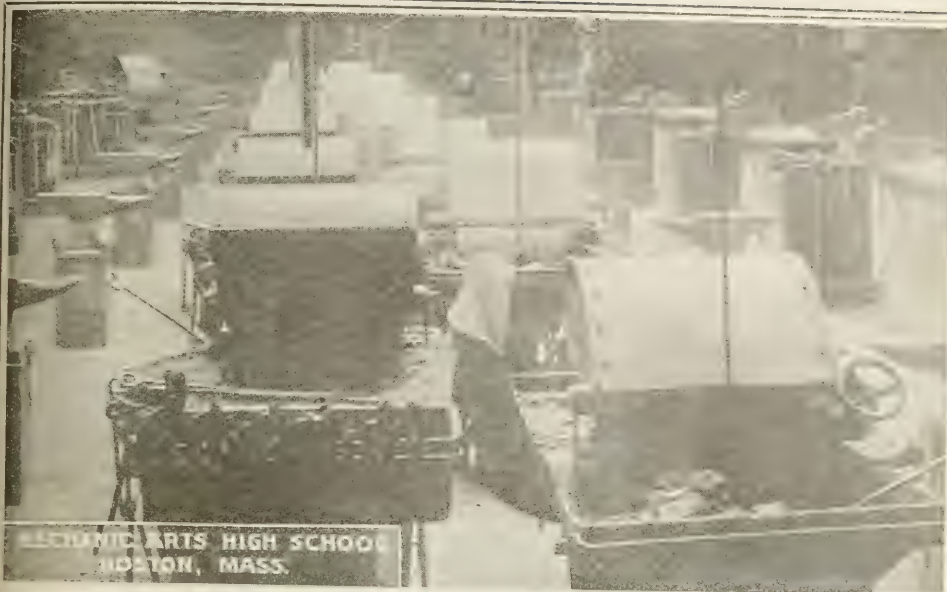
IN COOPERATION with the Photo-Engravers' Union, the Department of Education opened classes for apprentices at the Murray Hill Trade School. This is the first for union apprentices conducted by the Department, and the second in the city, Typographical Union, No. 6, conducting a school for Printer's apprentices at Hudson Guild. Two classes will be conducted, one in commercial photography and the other in freehand drawing. The aim of the instruction in the former subjects will not be to make artists or professional photographers, but to give a fundamental knowledge of the elements that enter into photography, so that the workers may understand better the photo-engraving process. The freehand drawing will give them an understanding of art. The classes will be for first and second-year apprentices, and it is expected that later the instruction will be developed to take in the older apprentices. Apprentices are registered with employers and the union for a period of five years.

THE SCHOOL ARTS LEAGUE has arranged a series of lectures and meetings, which will be for members and juniors. Cards of admission will be required.

THE COLLEGE OF THE CITY OF NEW YORK announces a free course in the Principles and Problems of Vocational Guidance, Placement and Follow-up Work by I. David Cohen, principal of the Brooklyn Vocational School, open to all teachers and social workers. The course is designed to train vocational counsellors, and is open to teachers and supervisors in continuation, trade, vocational, prevocational and elementary schools, to social workers, employment managers and educational directors.

Time of course: Saturday, 10 A. M.—10:30 P. M., commencing Oct. 9. The course will be given at The College of the City of New York, Twenty-third St. and Lexington Ave.

A COURSE IN WOODWORKING is being given under the auspices of the Brooklyn Teachers' Association at Public School 178, Brooklyn. Mr. George Rosmarin is in charge of the course. The course is



# AND IN SHOP

**Sturtevant**  
(REG. U.S. PAT. OFF.)

## Forges and Equipment Successfully Meet Every Requirement

In the school shop it is essential that each individual student equipment be complete, correct and always dependable. Sturtevant equipment is all that and more. Our forge equipment is built entirely by us, giving assurance of entire satisfaction. Behind every forge, stands the successful experience of sixty years of leadership.

# ANT COMPANY

  
MASSACHUETTS

---

---

Our Engineering  
Department will help  
you plan.

---

---



## FIELD NOTES—(Continued)

designed especially for teachers of special classes, teachers of ungraded classes, and substitute teachers in shopwork.

It is a sixty-hour credit course. It began the first Saturday in October, and will continue for twenty sessions of three hours each.

FREDERICK BRUCKBAUER, former member of the Board of Education of New York City and now chairman of the education committee of the Brooklyn Chamber of Commerce, criticises the city administration on its attitude toward vocational school training in an article in the Brooklyn Chamber of Commerce "Bulletin." Mr. Bruckbauer says that the idea of the present administration is that all public school teaching should be along the line of the old-time training that fits for professional life. He says that even the continuation of a technical high school course already started is endangered.

"Just what is a vocational school, or a manual training school, or a technical school, or a trade school, is much confused in the public mind," says Mr. Bruckbauer. "The woman who would not let her son attend a manual training high school because she did not want her boy to be a carpenter" was not so widely off the mark as to average intelligence on the subject.

"Nor is this to be wondered at, for even professional educators are not clear as to their definitions, or they overlap so much in giving them that the lay mind is utterly confused. Perhaps some day an ordinary citizen will give some fairly clear definitions."

"An attempt was made under the previous city administration to introduce vocational training in a limited way, but since the present officials are in power this has all been disposed of under a notion that all public school teaching should be along the line of the old-time training that, generally speaking, fits for professional life. Indeed, the continuation of a technical high school course, with hundreds of pupils already started in it, is imperiled because of the bugaboo of a 'Gary high school.'"

"There are serious questions to be answered on the subject of vocational training. How far is the city to educate for the various vocations? If we could allot young people as we wish, into what trades would we put them? An advisory committee from various labor unions was one time considered in the Board of Education, but naught came of it.

"Then it would not be easy to assign a certain boy to a certain trade. Parents are quite willing to have some boys become carpenters, but most people prefer that it be some other boy, not their own.

"Present conditions have taught us the value—just now very definitely expressed in money—of a trade, and everybody agrees as to the importance of the subject. Yet the teaching of a trade in the public educational system is to-day in this city not much further than in the days when the three R's were mistaken for the culmination of popular education.

"And yet the Chamber of Commerce should not rest, because the importance of training for other work than in the office was never greater than now. To be of real value the cooperation of employer as well as employe should be sought, so that technical and vocational training may not be an academic accomplishment, but rather that pupils graduating from it may be sought for in industrial establishments in a way that will leave no doubt in the minds of the young as to the value of the training they have had."

W. H. DOOLEY.

## FOREMEN TRAINING AT OSWEGO NORMAL

THE October issue of *Industrial Management* in an editorial entitled "The Systematic Training of Foremen" refers to the Oswego work as follows:

"No man is in a position to render more good, or to do more harm to an industrial organization, than the foreman. He is, the point of contact between the man and the firm—very often practically the sole point of contact in firms that have not developed a personnel department, or functional management.

"Not only must the foreman be thoroly versed in the technical elements of his work, but he must in addition display the proper personality as the representative of the firm.

"Very few managers will dispute this statement, which makes it the more surprising that so few of them take definite steps to systematically cultivate leadership and executive ability in their foremen.

"It is pleasing, however, to note increasing exceptions to this rule. For example, during the past six weeks there has been conducted at the Oswego State Normal School, at Oswego, N. Y., a training course the purpose of which is to cultivate the abilities of industrial foremen. The students who have been taking this course comprise notable industrial executives from a number of states. When they return to their respective plants their purpose is to start conducting conferences and classes for foremen along the lines laid down at Oswego.

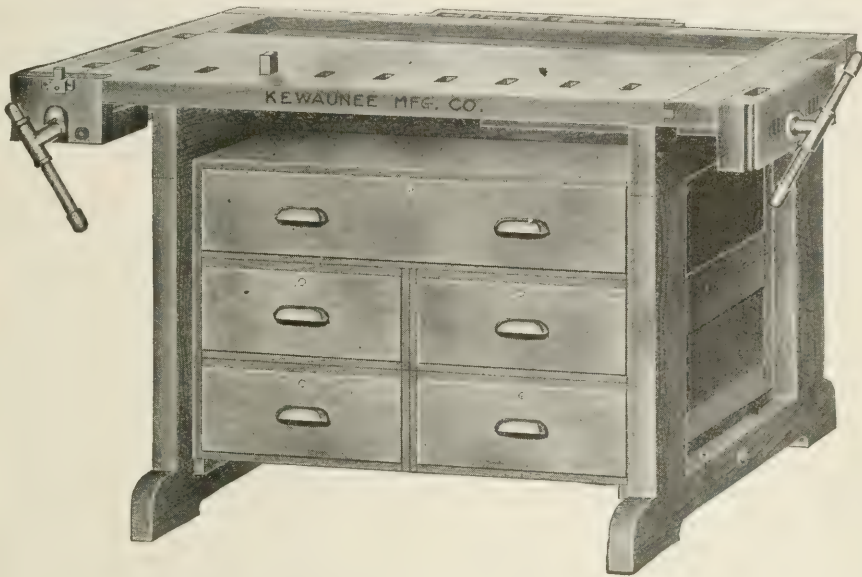
"To facilitate their purpose they have organized the Society for Foremen Training, the purpose of which is to promote and encourage the training of



# "Superior to Any We Have Used"

Thus writes the Secretary of the Board of Education, of an Indiana School:

*"We have received several pieces of the Kewaunee product and find it superior to any we have used and can recommend your goods to anyone contemplating installing furniture in their laboratories."*



MANUAL TRAINING BENCH No. 1905. Accommodates four students at a time.

Our experience in serving 1500 schools in America qualifies us to offer suggestions or advice regarding your next installation of Laboratory Furniture.

Kewaunee Spring Bolt Top construction is specially patented.

The Kewaunee Catalog is the most complete exposition of School Laboratory Furniture ever published. You will find it valuable. Send for a copy.

*Address all inquiries to the factory at Kewaunee.*

New York Office: ***Kewaunee Mfg. Co.*** 70 Fifth Avenue  
LABORATORY FURNITURE EXPERTS  
111 LINCOLN ST.  
**KEWAUNEE, WIS.**

## BRANCH OFFICES:

CHICAGO	ATLANTA	DALLAS	KANSAS CITY	SPOKANE	ALEXANDRIA, LA.
EL PASO	MINNEAPOLIS	SAN FRANCISCO	COLUMBUS	LITTLE ROCK	DENVER



## FIELD NOTES—(Continued)

men who will be better able to train workers to become efficient foremen.

"Mr. C. R. Allen, who inaugurated this course, is a leader in this line of education, and during the war was head of the foremen training departments of the shipyards of the Emergency Fleet Corporation.

"We shall follow with interest the developments of the work of this Society, believing that our readers will eagerly look for information on this very important subject."

### CONTINUATION SCHOOL WORK

**I**N MANY of the states part-time continuation schools are being organized this fall in much larger numbers than ever before. In some states this action is to meet the demands of new compulsory laws.

The provisions of the Illinois law do not become compulsory until September 1921, but several cities are anticipating the requirements by either introducing or extending the work. In California the compulsory feature is just going into effect and every boy and girl in industry not yet 17 years of age is being required to enroll in a part-time school and attend four hours a week between the hours of 8 A. M. and 5 P. M.

New Jersey is having a similar experience. The continuation school law became effective at the beginning of this school year, and new accommodations are being provided for thousands of children in the industrial centers. The work in New York and Pennsylvania is being extended.

The vocational education bill passed by the last legislature of Michigan makes mandatory upon communities of 5,000 population and upwards the maintenance of vocational schools for children between the ages of sixteen and eighteen. The bill affects only children who become sixteen after September 1 of the present year and who are not attending regular day school. Under this bill all children of this description must attend classes not less than eight hours a week, and the hours of attendance must be between 8 A. M. and 5 P. M. on regular school days.

### MORE APPRECIATION OF THE VALUE OF EDUCATION

**T**HE school census report in Philadelphia shows that 1913 to 1919 the number of children employed in the city dropped from 21,653 to 11,364, while there was a corresponding increase in high school enrollment during the same period. This, according to Henry G. Gideon, director of the

Bureau of Compulsory Education, indicates that parents were more and more striving to get their children a better education and were less inclined to have them go to work at an early age.

Indications also point to the fact, said Mr. Gideon, that the number of pupils employed during this year will reach nearly 12,000, the first time in years that the number has increased. This he attributes partially to the change in the industrial situation, and the continued high cost of living.

FROM ST. PAUL, Minn., comes the statement that more than 4,000 pupils entered the high schools of that city in September. This number has been compared with that in 1890 when there were 625 pupils and shows an increase of 565 per cent in the 30 years, whereas, the increase in population is only about 100 per cent.

"This gain in high school attendance," says the *St. Paul Dispatch*, "is remarkable evidence of the greater value now placed on education above the eighth grade as compared with 30 years ago.

"Educators declare that the chief reason for the increased demand for high school education is in the attitude of employers in all commercial lines. They prefer and frequently demand a high school education in young men and women seeking work. Compulsory education laws and child labor restrictions have little to do with the case, as a good hare of the pupils are more than 16 years old and nearly all are more than 14.

"A striking fact in this connection is that there is almost exactly the same proportion of boys to girls in the high schools in 1920 that there was in 1890. In June, 1890, there were 289 boys and 336 girls enrolled in two high schools. In June, 1920, there were 1,902 boys and 2,254 girls in four high schools. Practically 46 per cent of the pupils were boys and 54 per cent girls in each instance. The introduction of manual training and commercial branches has attracted more boys, while general prosperity has made it possible for more girls to acquire a degree of education that used to be considered non-essential in less enlightened times."

### FROM THE SOUTHWEST

**OKLAHOMA CITY.** The junior high school buildings have been delayed in construction so that they will not be ready until next year. A class in cabinet making is now organized which will make all the stools and benches for the gymnasiums in the three junior high schools. This class will also construct the drawing benches for these schools.

Three additional grade centers have been equipped. Manual training is now taught in the sixth grade and in all the grades above the sixth.



## *“Simply Stain It—Any Color— with Johnson’s Wood Dye”*

JOHNSON’S Wood Dye is just the preparation for staining manual training models. It is very easy to use—goes on like oil without a lap or streak. It is made in thirteen attractive shades—which may be easily lightened and darkened. Complete instructions are given on the label.

### JOHNSON’S ARTISTIC WOOD FINISHES

Johnson’s Artistic Wood Finishes are now being used in nine-tenths of the schools in the Country. They are particularly adapted for manual training work as they may be applied by the youngest and most inexperienced pupils with the best results.

The Johnson Wood Finishes most popular among Manual Training Instructors and Pupils are *Johnson’s Wood Dye, Prepared Wax, Under-Lac, Paste Wood Filler, Flat Varnish, Perfectone Under-Coat and Perfectone Enamel*. We have a very attractive exhibit of wood panels finished with these products which we are glad to send Manual Training Instructors who will give it wall space in their shop. Write for it.

#### *Beautiful Instruction Book Free*

Our beautiful new thirty-two page color booklet “The Proper Treatment for Floors, Woodwork and Furniture” is just off the press. It is full of valuable information for Manual Training Instructors and Pupils. Do not hesitate to write for it. We will gladly furnish it upon request.

**S. C. JOHNSON & SON, Racine, Wis.**

“The Wood Finishing Authorities”  
Canadian Factory—Brantford







*Boyle Heights School,  
Los Angeles, Calif.*

## Standard School Equipment

The Buffalo Forge Company are the inventors and sole manufacturers of the Down Draft Forge.

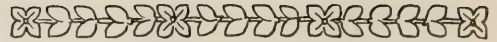
This forge returns the unconsumed gases for complete combustion. Recommended particularly for schools where gases and fumes must be removed because they frequently injure the students health.

Send for catalog 205-31 which contains notes on forge shop practice and modern equipment for schools of mechanical technology, etc.

**Buffalo Forge Company**

BUFFALO, N. Y.

*"Buffalo"*



### FIELD NOTES—(Continued)

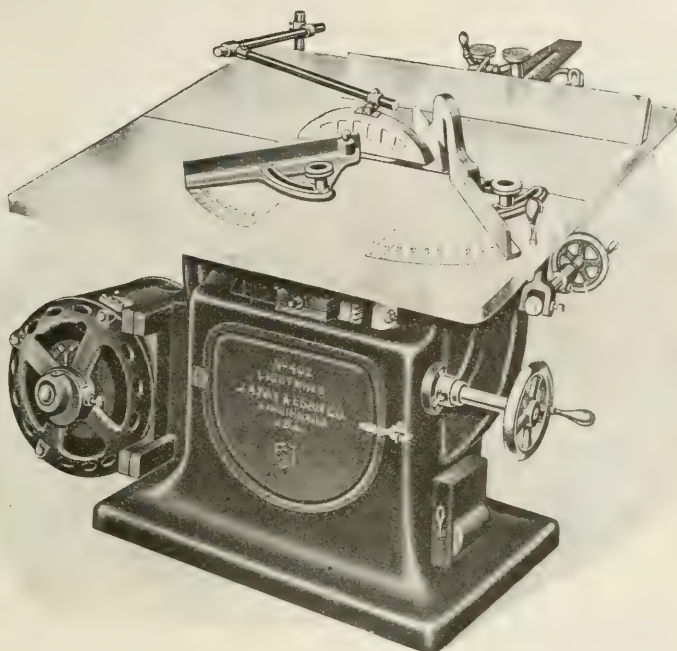
The department has installed two Wallace Bench Saws.

B. P. Stockwell is a new member of the faculty in the Department of Industrial Arts in the high school.

ADA, OKLAHOMA. The scope of the work in manual arts in the East Central State Normal School has been greatly enlarged this year. A wood working shop accommodating sixteen students has been equipped in the new training school building which was completed last summer. This shop is used by the practice teachers in teaching the classes in the training school. In addition to this, another room has been added to the department in the main building. This arrangement gives five large rooms to this department, and makes it possible for some real work to be done in the training of future teachers for the schools of the state.

OKMULGEE, OKLAHOMA. The new vocational high school on which construction was begun a year ago has been delayed by strikes and lengthy negotiations to the extent that the building was far from complete at the beginning of the new school year. While this was quite a disappointment to the teachers who were to occupy the new building, none of them gave up in despair, but everyone put himself to the task of finding temporary quarters for his classes.

Woodworking benches were placed along one wall in the drawing room so that classes in elementary woodwork might be given there whenever the room was not occupied by drawing classes. Benches were also put in open spaces in the mill room for the use of classes in cabinet making which could not be accommodated in regular woodworking room. The old electrical shop was divided up into two rooms so that work of two independent classes may be carried on at one time. Two men came to take charge of the new automobile department; having been told of comfortable quarters that would be at their disposal. Instead of that they found nothing but the skeleton of what promises to be comfortable quarters some time next spring. These men lost no time in grieving over the matter however, but tackled the job of constructing a temporary building for their work. Within ten days the automotive department was in working order with more than fifty students busily engaged in repairing cars. Due to this spirit of cooperation among the teachers and the ingenuity of the management, all of the courses that were put on the program for this year are being given. The school is in session from 8:10 in the morning until 4:30 in the after-



# Satisfaction

GOES A LONG WAY IN MAKING VOCATIONAL  
TRAINING IN YOUR SCHOOL  
A SUCCESS

It is impossible for your faculty or students to put forth their best efforts if handicapped by the lack of proper equipment.

The No. 402 "Lightning" Universal Saw is especially designed for ripping and cross cutting in pattern and cabinet shops of technical schools and colleges.

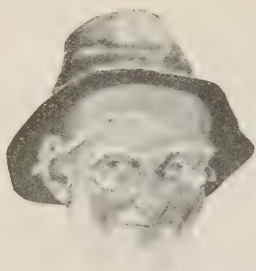
It has a wide range of adjustments, all quickly made and will meet all requirements of a medium priced tool.

*Let us send you a catalogue.*

## J. A. FAY-EGAN CO.

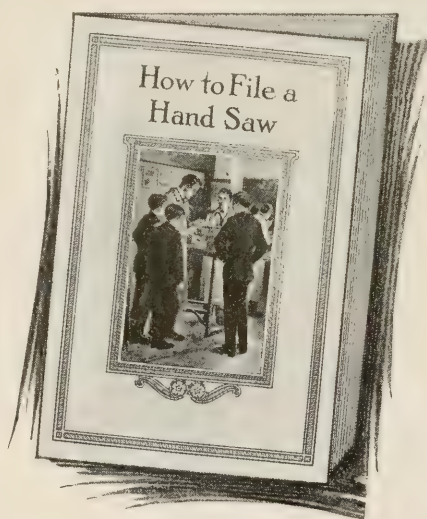
ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Tools  
730-750 W. FRONT ST. CINCINNATI, OHIO



## Uncle Si Says:

"Filing a hand saw is like riding a bicycle. It looks easy, but you have to get on to the knack of it or you can't do it. If someone had explained saw filing to me as clearly as it is printed in Simonds book, I would have saved many months time and a lot of saw teeth."



This book, "*How to File a Hand Saw*," issued by Simonds, "The Saw Makers" ought to be in the hands of every instructor or supervisor of Woodworking.

*Copy mailed free on request.*

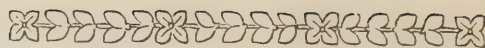
**Simonds Manufacturing Co.**

"THE SAW MAKERS"

FITCHBURG, MASS.

5 FACTORIES

12 BRANCHES



### FIELD NOTES—(Continued)

noon in order that so many more classes may be given in each room.

Five vocational courses under the Smith-Hughes law are now given in the Okmulgee high school. These are electricity, printing, automobile work, carpentry and home economics. Automobile work and carpentry are new courses introduced this year.

The automotive department is headed by E. P. O'Neil, with J. C. Douthit as assistant. Mr. O'Neil is a graduate in electrical engineering from the University of Arkansas: He was in charge of the electrical division of the automobile school in the same university during the war. He also worked for a time with the International Motor Co. of New York. Last year, while doing his postgraduate work in the University of Arkansas, he served as student instructor in that institution. Mr. Douthit is also an Arkansas University man. He was for a time in charge of the electrical repair department of Harley Davidson Motor Cycle Sales Co. of New York. During the war he attended the Columbia Naval Gas Engine School. He was later an instructor in aviation motor theory at which time he was stationed at Pensacola, Florida.

The vocational carpentry is in charge of L. E. Biddick, who has a B. S. degree in Industrial Education from the Stout Institute. Previous to his graduation from the Stout Institute, Mr. Biddick was graduated from the Platteville Normal School, Wisconsin, and had also taken studies in the University of Chicago. In addition to this he has about five years of practical experience in the carpentry trade.

Other men added to the force in the vocational high school this year are J. F. Chapman who teaches junior high school work and woodwork in the grades; and C. A. Parker who teaches vocational printing. Mr. Chapman is a normal school graduate and also has had several years of practical carpentry experience. Mr. Parker has spent fourteen years in the printing trade, has received pedagogical training at Cleveland School of Education, and has served four years as a teacher of printing.

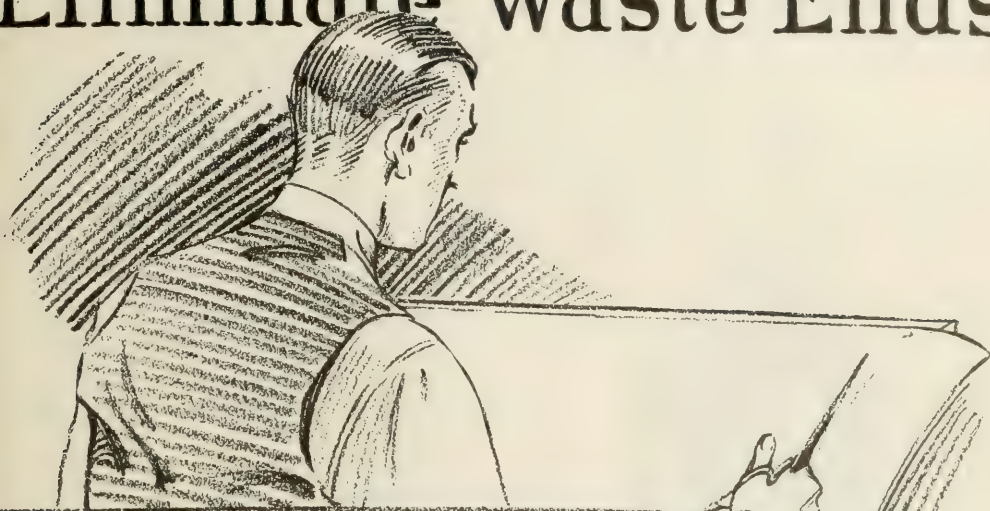
E. E. ERICSON.

THE NEW ENGLAND VOCATIONAL GUIDANCE ASSOCIATION has decided upon a program of meetings for the year. It will hold three or four meetings in Boston devoted to the study and discussion of the issues and problems of vocational guidance, and a large popular convention sometime during the winter at Boston University. Several additional meetings are to be arranged for other New England cities with delegations from Boston in attendance.

THERE ARE TWO ARMY AUTOMOBILE SCHOOLS AT



# Eliminate Waste Ends



Cut and scrapped tracing cloth ends represent real honest-to-goodness dollars gone to waste—needlessly. For such waste is easily preventable.

Buy National Tracing Cloth in cut and printed sheets—at the same cost as in rolls. Get your exact size. Have your design, border, title, corner card, etc., printed on it clearly and evenly in a non-smearing, waterproof ink. Save valuable ends. Utilize the time and effort of your hand letterers for more productive and profitable work.

Moreover, because of its unordinary transparency, its uniformly fine texture, its non-cracking, long-wearing, non-clouding qualities; and because it requires no pounce nor powder, takes either fine or coarse lines without blurring, withstands repeated erasing and gives more, clear, clean-cut, easily-read blueprints, National Tracing Cloth stands alone. We guarantee every yard. To prove for yourself the utter superiority of "National", let us send you—free—a working-size sample. Test it thoroughly in your own way.

## NATIONAL TRACING CLOTH CO.

SAYLESVILLE, RHODE ISLAND

NEW YORK OFFICE

72 LEONARD STREET

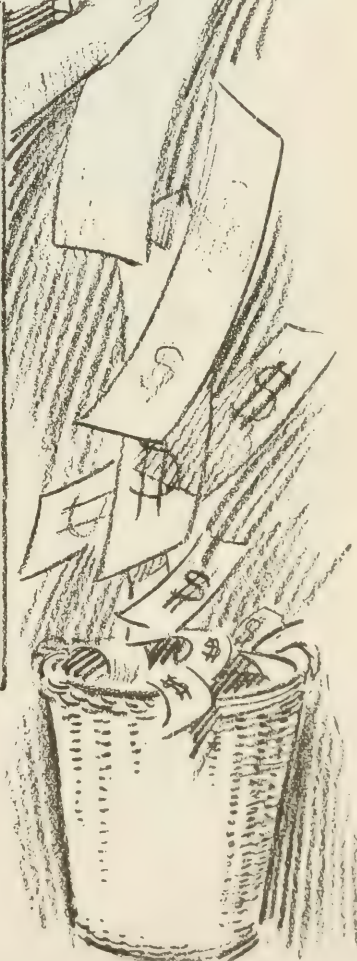
### OTHER PRODUCTS

National Vellum Cloth

National Blueprint Cloth

National Tracing Paper

National White Pencil Cloth



*National*  
TRACING CLOTH

# SHOP APRONS

*Guaranteed*

Adjustable  
Neck  
Strap

Saves  
Many  
Times  
Their Cost



**The Apron You Can Buy  
with Confidence**

Standard  
Equipment  
In the  
Best Schools  
Everywhere

Instructors Apron free with first order

Price, White 75c

Price, Brown 80c

Delivery Same Day

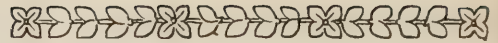
Send no money—Just your order to

**CANVAS PRODUCTS  
CORPORATION**

19-21-23-E. McWilliams St.

School Dept.

FOND DU LAC, WISCONSIN



## FIELD NOTES—(Continued)

Fort Sill, Oklahoma, one in the 1st Field Artillery at Post Field and the others at the 9th Field Artillery which is attended by both 9th and the 14th Field Artillery. The regimental machine shops are used for the repair work with a good toolroom in each place. In addition to a very complete machine shop equipment there are cylinder grinding machines and many special tools. The equipment also includes lecture rooms and carburetor, ignition, starting and lighting laboratories with plenty of material to work on. The walls are covered with charts. Each student spends three and one-half hours in the shop daily including a one-half hour lecture period. Harry W. Anderson, director of the Automotive Department, writes that the working material, such as trucks, cars, etc., includes over forty vehicles that are the property of the schools, besides all the vehicles in the transportation line. It also includes a large number of motors and other parts of cars and even thirty airplane motors ranging from La Rhone and Gnome to 12-cylinder Liberty. The instruction personnel consists of three commissioned officers and fifteen enlisted men besides the director.

THE NEW DELGADO TRADE SCHOOL at New Orleans, La., will be open by January 1, 1921. The building is nearly completed now.

Some years ago Isaac Delgado, a wealthy citizen of New Orleans, died, leaving in his will the sum of \$800,000 for the establishment of a trade school for boys and men. The city of New Orleans put the money at interest and the sum has now grown to be a million and a quarter dollars. By the terms of the will this money must all go into buildings and equipment.

The State of Louisiana is entitled to receive a considerable sum for trade education from the Federal appropriations under the vocational education act. The state supplements this amount by \$50,000 a year provided by the state legislature for the maintenance of the trade school. The school will thus have a large annual maintenance fund.

—SCHOOL LIFE.

ACCORDING to newspaper reports the school authorities in Minneapolis are endeavoring to work out a system of credit for part-time students whereby a student may be given some school credit for the work done in an industry or store. Up to date the indications are that "boys and girls who are engaged in part-time work are more efficient in school than those who have time on their hands outside of school hours, and that some of the work done outside by pupils is in advance of their school work, and is entitled to credit."

# Manual Training Magazine

NOVEMBER, 1920

## AN APPLICATION OF THE PROJECT METHOD

ELEMENTARY MANUAL TRAINING—FIFTH GRADE

J. H. TRYBOM

Director of Industrial and Manual Arts, Detroit, Michigan

THE problem of elementary manual training, altho of relatively greater importance than the work of this nature in the upper grades, has received comparatively little attention during the past decade.

The application of scales to manual training instruction, with the purpose of encouraging self-appraisal by the student, may be the one outstanding new element in this presentation of a course of study for the fifth grade. In working out the plan presented in this article I am indebted to our director of educational research, Stewart A. Courtis, and to the Committee of teachers for many valuable suggestions.



J. H. TRYBOM

involving the construction of toys and useful objects, initiated as far as possible by the pupil himself.

1. The teacher will supply the stimulus for a definite problem, which must become the pupil's own hearty purposeful act. These stimuli may be supplied (a) thru a large variety of suggestive problems exhibited in the shop; (b) thru illustrated books, magazines and drawings; (c) thru pupil's or teacher's personal experiences and interests.

2. When the pupil fully realizes the need of and applies for the teacher's assistance with new tools or processes necessary in the solving of his problem, the teacher should give the needed

demonstrations and explanations.

1. To help a boy to acquire the habit of planning and making things for which he sees a specific need; and by so doing to satisfy his instinctive craving for expression in a manner servicable to his own growth.

2. To teach a boy those processes of construction which will help him to become a "handy man" in his home.

### GENERAL METHOD

The aims of this course are to be achieved thru participation in activities

3. When this instruction has been given, and a certain standard of workmanship (illustrated by scales) has been attained by the pupils and passed-on by the teacher, the control of the children's activities should pass from the teacher to the child. This general condition is not intended, however, to serve as a bar to the teacher in giving such advice as will prevent waste of material and time, breaking of tools, or total failure by the pupil; but the child should in general be given freedom to carry out his purpose.



The following quotation from Prof. Kilpatrick is suggestive on this point: "This again is not to say that every purpose is good, nor that the child is a suitable judge

sistently at securing and utilizing vigorous purposing on the part of the pupils, is founded essentially on an ineffective and unfruitful basis."

GROUPS OF SUGGESTIVE PROJECTS, SCALES, AND ABILITIES REQUIRED.

GROUP	SUGGESTIVE PROJECTS FOR INDIVIDUAL SELECTION	ABILITIES REQUIRED	SCALES FOR FOR SELF-APPRAISAL	STANDARDS
1	Picture puzzles String winders	Tracing pattern Sawing with coping-saw	Coping-saw exercises	The standing of the student should be determined by the following factors: 1. Success in inventive or partly-original work. . . . . 50% 2. Independence in working out his projects. . . . . 25% 3. Persistence in teaching a satisfactory workmanship. . . . . 25%
2	Tea-pot Stands, etc. (Original design)	Finishing edge (a) with knife (b) with spokeshave (c) with file (d) with sandpaper	Knife-work to line Filing and Sandpapering	
3	Toy animals Tables Parrots, etc.	Use of back-saw Nailing Painting	Sawing with back-saw Nailing	
4	Match-boxes Ink-stands Chairs Rockers Boats, etc.	Edge-planing	Edge-planing	
5	Pencil-boxes Stationary boxes Carts Weather-vanes Picture frames Tumblers Clowns, etc.	Squaring to dimensions Boring	Squaring Boring	
6	Automobiles Trucks Carts Any original projects			

as between purposes, nor that he is never to be forced to act against a purpose which he entertains. We contemplate no scheme of subordination of teacher or school to childish whim, but we do mean that any plan of educational procedure, which does not aim consciously and in-

MATERIALS OF CONSTRUCTION  
Thin wood (cigar boxes), brads, glue, paint.  
  
TOOLS AND INSTRUMENTS  
Pencil, rule, compasses, coping-saw, knife, spokeshave, file, sandpaper, paint

brush, back-saw, smooth plane, try-square, bit-brace and bits.

#### ROOM EQUIPMENT

Simple workbench and locker for each student.

#### NECESSARY SHOP FACILITIES

A. A large variety of suggestive articles for examination and study to make it possible for the boy to initiate his project.

B. Sufficient tools and instruments for individual use in planning and carrying out his project.

C. Suitable scales illustrating standards of workmanship with the various tools and instruments, for self-appraisal and criticism of his project, both under construction and when finished.

#### SUGGESTIVE PROJECTS

To facilitate the initiation of the project by the pupil, the shop should be equipped with a large variety of useful articles and toys of various degrees of difficulty. As a large number of constructive processes are involved in most of these articles, it would seem best to arrange them into groups and base the grouping upon the difficulty of the exercises involved. Thus, we would select, in Group 1, articles that can be made serviceable with the coping-saw alone, such as "picture puzzles, string winders, etc." In Group 2, tools for finishing a narrow edge are added, which opens up for the student a larger variety of projects. This method is followed thru the whole course, up to the sixth group which forms an application of the abilities acquired previously by the student and initiates the construction of the more advanced projects.

#### ABILITIES REQUIRED

The third column in the accompanying chart gives the new exercises involved

in each group. The simple tools required should be accessible for free use by the individual students. The students should as far as possible be made responsible for the sharpening of these tools and *keeping them in good working condition*. The maxims that "Only poor workmen are satisfied with poor tools,"

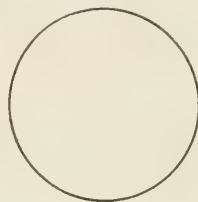


FIG.1



FIG.2

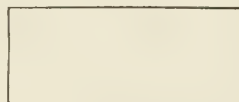


FIG.3

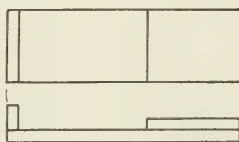


FIG.4

and that "Only poor workmen blame their failure on their tools" should be impressed on the pupils.

Another important truth, that the pupils should be taught to appreciate thru their own experiences, is that anyone who wishes to excel in any line of work must practice to gain ability; as, for instance, the ball player and other ath-

letes, the toy maker, and the mechanic, etc.

#### SCALES

##### Purpose:

1. To demonstrate to the student various degrees of workmanship.
2. To serve as a means of self-appraisal.
3. To serve as an incentive to effort.

It is suggested that the following scale be kept in each shop, in easy access of the pupils:

1. Coping-saw. Cutting circle, 2" radius, Fig. 1.
2. Knife. Finishing edge, Fig. 1.
3. File and sandpaper. Finishing edge Fig. 2.
4. Sawing, end square, cutting outside the line. Fig. 3.
5. Nailing and Fitting. Fig. 4.
6. Painting. Block 2"x 5", Fig. 3.
7. Squaring. Block 2"x 6".

In making up these scales, it would seem best to arrange a very large number of pieces (made by pupils of this grade) into specimens representing five different degrees of workmanship, varying from "excellent" to "very poor." The scale for the coping-saw, for instance, would be made up from specimens from many classes, which have been sorted into five groups of various degrees of workmanship. One specimen from each group is selected, and these five circular pieces of wood are put up in the shop and marked from 1 to 5, or from "excellent" to "very poor," and will serve as a scale for this exercise. In many cases it may prove easier for the teacher to make the scale.

The students should make use of these scales individually, during the class period as needed. The element of self-appraisal is vital to the best results of this method; but self-appraisal has but little significance in the training of the student if it does not lead to greater effort. It has been demonstrated beyond a doubt, how-

ever, that scales for self-appraisal will lead to an increasing degree of effort, and in this lies the significance of this method.

#### THE TEACHER'S PROBLEM

1. In General: The boy should realize a need for certain information before it is thrust upon him. To execute the project, certain knowledge and abilities are essential. The opportunity for the teacher comes when the pupil realizes this need.

At this stage, information and certain practice (if necessary for the successful execution of the project) should be supplied by the teacher, in a definite, business-like manner, with clearly illustrated standards (scales) as to various degrees of workmanship in the particular exercise involved. When a certain degree of ability, necessary for the construction of the project, has been acquired (and the boy should generally be his own judge), he proceeds with his project.

2. Specific applications in thin wood-work:

##### Group 1:

- (1) Selecting projects in Group 1 by pupil.
- (2) Make pupils realize the need of instruction and the possession of the means by which to execute their projects. Knowledge of tools, etc. Have one pupil reproduce a pattern. Have another pupil use the coping-saw without instruction, at the demonstration bench. Results will naturally be very poor. Is this boy's work very good? Why not? How could he improve his work? How could you boys avoid doing what this boy has done?
- (3) Give demonstration lesson on use of coping saw. Is this work better than that of the first boy? Why? Why must you be very careful to hold your work down tightly? In what position must you hold your coping-saw? Which method do you think would give you the best results—the first or second method?
- (4) Show and explain scale of coping-saw exercises. Have pupils examine individually.
- (5) Have pupils practice until a certain degree of ability is acquired, and grade their work until the children meet the standard of efficiency set by the teacher and illustrated by scale.
- (6) Trace projects selected.
- (7) Saw to lines with coping-saw.



*Group 2:*

(1) Selecting projects in Group 2. Studying models suggested for this group, what new thing do you have to learn? What would you use to make the edges smooth? Why?

(2) Finishing edge after cutting with coping-saw. Careful demonstration after students realize need of this knowledge. What must you be careful of, when finishing an edge? How would you avoid breaking your model when filing or sandpapering the edge?

(3) Demonstrate scales. Pupils examine individually. Why is this one graded as excellent? Why is this one graded as poor? etc.

(4) Practice with knife or spokeshave to reach a certain degree of ability.

(5) Trace projects selected. Saw to line and finish with knife or spokeshave and sandpaper. In finishing the edge with a knife, what must be kept in mind? What precaution would you take in sandpapering your model?

*Group 3:*

(1) Selecting projects in Group 3. Studying the workmanship of model chosen. What *new* work do you see in this project? How would you cut the end of a board square? (Have one boy try.) Can anyone explain why this attempt is not done well?

(2) Squaring end. Make a line with try-square and pencil. Careful demonstration of sawing outside of line. Why do we use a back-saw? Can you cut an end as square with a coping-saw? Why?

(3) Demonstrate carefully the scales of sawing. Have pupils examine individually. Questions asked—why these scales are graded this way.

(4) Practicing with back-saw till some degree of skill is acquired. What difficulties did you have in sawing? How can you avoid these difficulties? What grade have you reached in your practice sawing?

(5) Complete project up to assembling.

(6) Nailing two pieces together. Have one boy nail two pieces together at demonstration bench. Is it a good job? Why? If the nail goes thru both pieces, what should be done? If the nail comes out at the side, what would you do? What happens if you drive a nail close to the end of a piece of stock?

(7) Demonstrate scale, and have pupils examine individually. Have pupils grade this boy's work done at demonstration bench. Why did you grade this work as you did?

(8) Practicing nailing of two pieces together. (This is done as the scales represent this work.) Have pupils grade their practice work.

(9) Assembling of project.

(10) Painting. Why is paint used? What other methods have we of changing the appearance of wood? Are toys painted? Is furniture painted? Why?

(11) Demonstration in painting is given carefully. Why must the paint be brushed out so carefully? Is it necessary to wait till the first coat of paint is dry before you paint over it? Why?

*Group 4:*

(1) Selection of models in Group 4.

(2) Careful study of new models, and deciding upon the new kind of work to be done. What tool would you use for smoothing an edge? How would you hold your stock?

(3) Demonstration in edge planing. Have one pupil try at demonstration bench. What seems to be this boy's difficulty? How can he overcome it?

(4) Demonstration on adjusting plane bit is given.

(5) Scales are demonstrated and examined carefully. Pupils practicing edge planing, and then grade their work according to scales.

*Group 5:*

(1) Selection of models in Group 5.

(2) Pupils decide what *new* work is involved.

(3) Squaring to dimension. To make two parts of a model alike, what things must be kept in mind? (Take a pencil box, for example.) Will you have a good job done if one side of box is longer or wider than the other? If one end is wider than the other? Why? What must you do? When you fit two pieces together, and the edges are not tight, is it a good fit? Is it necessary to have the parts of these models fit exactly? Why?

(4) Boring. What models in this group need boring? Why? How can we bore a hole? Would a knife do? Have one pupil bore a hole. Results will generally be the splintering on back side. Pupils realize need of instruction.

(5) Careful demonstration of boring a hole properly. Can you spoil your work by doing a poor job of boring? What things must you keep in mind, when boring clean-cut hole?

(6) Demonstrate scale of boring exercise, and have pupils examine individually.

(7) Practice boring until some skill is acquired. Grade practice work. Bore the necessary holes in model.

*When he saw they were interested, he pursued the same topic for hours, and left it only when the interest flagged or the point was attained*

SAID OF PENTALOZEL

# PROBLEMS IN VOCATIONAL ADVISEMENT AND COUNSELING

LEONARD W. WAHLSTROM

Federal Board for Vocational Education, Chicago

THE problem of vocational counseling and advisement of the present day is vastly more complicated than was formerly the case. We cannot pursue the leisurely method adopted by Benjamin Franklin's father, in which he was able, taking his son by the hand to stroll from industry to industry, observing the men at work, noting their tools, the skill of hand required, the mental qualities needed, and countless other requirements for success. These visits no doubt furnished fruitful material for chats about the future of the youthful Benjamin, and were the basis for a serious attempt on the part of the elder Franklin to guide his son to a successful life occupation. With the simple conditions of those days, each industry an open book in which "he who runs might read," the conditions of modern industry are indeed a contrast. The dangers from mistakes are greater today than they were in the past. The smoothly flowing waters of modern industry are more apt to carry a youth thru the earlier years of his productive life and into the whirlpool, from which he cannot turn back, than was the case in the earlier apprenticeship days of Benjamin Franklin. Then the apprentice was directly under the eye of the master workman, and closely watched to note his adaptability to the trade of his selection. Today, modern industry, with its intense specialization and alluring wage, is apt to trap and misguide the youth who is eager to escape from his books, and enter upon a life of productive activity.

While conditions of industry are vastly changed, the fire, the zeal, and the impetuosity of youth remain. The zeal of adolescence, with its ideals, urges him on, seeking the unknown, the distant, the adventurous. Happy the youth who

makes the right choice of occupation, and happier his later life, when he reaches success. But many a youth flounders about, after making a wrong choice, and only after bitter experience "finds himself," and is able to struggle upward, overcoming the handicap of the "wasted years." Bitter indeed the life of the boy and man who fails to make the adjustment.

Into this situation steps the adviser, or counselor, who is expected to take each individual, diagnose his case, and prescribe for him, dealing with industrial ills much as a doctor treats physical ailments. In an endless procession comes the eager youth, stepping out for the first time into industrial life; the "hopesick," whose ambition is about to desert him, due to experience with a wrong occupation, the ne'er-do-well, whose ambition must be developed anew, and the misfit whose persistence urges him on when his capital in physical and mental qualities were better invested in another line.

The problem at present is indeed a complicated and a serious one. This will continue to be the case until the curriculum of the school is so modified as to gradually lead to a development and an emergence of those qualities in each individual which will naturally direct him into his proper life work. This modification is slowly and gradually taking place, but until such time as the present subject-matter and the method of records in vogue in the schools is either supplanted or supplemented by subject-matter and records which are valuable in selecting a vocation, the counselor must build up his information about each case on short acquaintance and rather meager aid from present school records. Often the most valuable material to the

counselor is such as he discovers quite by accident and which the school has taken no cognizance of. The school may grade a pupil by percents in the formal studies which he has been compelled to struggle thru, but has no record of the interest and growth which has been gained from successfully managing a back-yard poultry plant, for instance, or the business sense developed in a small commercial enterprise carried on after school hours and on Saturdays. In fact, ofttime these self-imposed tasks and interests persist thru a greater share of the boy's school life, and the school may be utterly unaware of the enterprise of the lad. The school contributes nothing to this interest and draws its material but rarely from the fund of experience which the boy may be gaining. Thru it all, the boy leads a sort of "Jekyll and Hyde" existence, his school life and his "real" life, two distinct entities. Real vocational interests are lost sight of by the school—nay, even crushed out by this method of neglect. Biography is full of examples in which a leader in a certain field of endeavor has been saved to the world by the independence of the youth which has led him to follow an impelling and absorbing interest rather than to continue a school course which gave no recognition to this interest. Edison is a notable example. While many a star of the first magnitude has thus been saved, we have no means of knowing how many lesser stars in the fields of science and industry have been denied to the world thru the repressive methods of the schools. It is to be hoped that school authorities, with the cooperation of vocational counselors, will rapidly work out a set of records which will give much of this information now lacking. Absence of such records at present adds to the problems of the vocational adviser.

Vocational advisement is a broad field,

the possibilities of which will be appreciated more and more as the work develops. The reaction which it will have on the schools will be valuable also, as it brings back to the school evidence of its weaknesses and failings. The counselor's office, properly conducted, becomes a laboratory in which human material is assayed and tested, put to a microscopic analysis and directed into proper channels for industrial utilization. It is a conservation movement, the efficiency of which is dependent upon the breadth of view and insight of the counselor. Given a counselor with no perspective of the industrial world and no knowledge of human nature, it degenerates into a mere placement office or employment bureau, the success of which depends on chance and the inefficiency of which is attested by the trail of dissatisfaction which haphazard methods create. The success or failure of an adviser is easily gaged by the attitude of employers who have come in contact with the results of his work.

On the personality of the counselor depends much of the success of the office. Is he a man with the breadth of view and the industrial intelligence mentioned above? Does he have a warm-hearted, sympathetic quality which instantly attracts an applicant? or is he cold, aloof, and repressive? Needless to say that the counselor who possesses a sympathetic insight for the problem of his applicant or "patient" is the one who succeeds. Much depends upon the first impression which the counselor makes as to the success of the interview. Enthusiasm for his job is a prime requisite. He must be one who can stimulate the same enthusiasm in those he is counseling. A keen insight into human nature will permit him to note the really valuable and vital characteristics. In a study of character in young people, too much stress



has often been placed on the "Sunday-school" qualities—blackened shoes, neatly combed hair, and the like. Desirable qualities as these are, and much to be commended, oftentimes an individual who prides himself on character analysis will give them undue weight while neglecting to recognize other character elements without which success would be impossible. In character analysis, a knowledge of race and national characteristics on the part of the adviser is also an essential, especially in localities populated by considerable proportion of foreign-born citizens. Often family and race difficulties may be back of a failure of the young worker to become properly adjusted industrially. This may be true with youth of the second generation in immigrant families. Wise and cautious advice to the young worker, supplemented by a conference with the older members of the family, will often lead to a better understanding and adjustment which will smooth out difficulties rapidly approaching a break between the younger and older generations. In this way the counselor may not only aid the young worker to find the occupation for which he is best suited, but will also preserve the family as a social unit. By the elimination of friction, and the development of mutual understanding, the counselor is able, in an indirect way, to increase the industrial efficiency of each member of the family group.

In regard to his office surroundings, the vocational counselor can do much to inspire, encourage, and stimulate those with whom he comes in contact. Confidence is also established by a dignified and attractive environment. The counselor should surround himself with as much material about the various occupations and industries as possible, portraying their best points. These may well be in the form of photographs, charts,

books, pictures, and exhibits of industrial material; also portraits of inventors, scientists, and men of industry. There should be an inspirational atmosphere about his office. The office should be an "opportunity room" whose atmosphere should suggest hope and aspiration rather than the dreariness of the stereotyped employment office. In many school systems where the problem of vocational advisement has been attempted, the neglect of this feature alone—that of suitable quarters—has often proved a drawback to the success of the work. There is no reason why matters pertaining to industry should be condemned to gloomy and sordid surroundings. The opposite condition would raise the respect of the worker for his trade and elevate conditions in the trade itself.

Given suitable quarters and a counselor who is alive to the possibilities of his position, the real problems begin with the coming of the applicants. Each individual presents a new problem, differing from every other in certain aspects. The first contact of the counselor with the individual case should be such as to inspire confidence. Frankness should be encouraged, and the same feeling of faith developed in the ability to solve a problem as is the case of the physician dealing with bodily ills. In some cases several conferences may be necessary, and in general they should lead to a determination of the following points:

1. Previous industrial experiences. Have they been
  - a. a failure
  - b. discouraging
  - c. successful, leaving an eagerness for further success and advancement
2. Mental state of applicant. Is he
  - a. optimistic, exuberant, or over-confident in his powers and ability.
  - b. discouraged, lacking initiative.

c. indifferent. Are there latent powers which should be aroused?

3. Physical condition. Is his physique such as to make him suitable for the contemplated occupation?

4. Moral qualities. Is he honest, frank, and open-minded?

In these conferences, the following results should be aimed at by the counselor:

1. Help the applicant to take account of stock.

a. his educational and mental equipment.

b. his physical condition.

c. the value of previous experiences for his future occupation.

2. Discuss with the applicant the proposed occupation, pointing out its advantages, its dangers and rewards, with a view to determining the individual's adaptability.

3. Stimulate him to view his occupation as his life work, in which he is fulfilling his best service to his fellowmen; in other words, to quote Dr. Dewey, "saturate him with the spirit of social service."

In these conferences, the counselor should always have in mind that it is not his duty to make an arbitrary selection of a vocation for the individual, but rather

to lead the individual to so analyze his own powers as to enable him to make his own selection. The final decision, which is the result of counseling, must be made by the applicant, not forced on him by the counselor.

A system of checking up the results of his work is necessary to judge a counselor's success. Some method of follow-up work, or of keeping in touch with the applicants who have passed thru the office should be devised. A counselor with the right personality will encourage a return visit to the "opportunity room" when everything is progressing properly, merely to report progress. Such visits are of value to the counselor in verifying and checking his work. A system of follow-up cards, calling for reports from employers, should be used where the personal touch cannot be maintained.

In these few paragraphs, the attempt has been made to outline very briefly some of the problems which arise in vocational advisement and counseling. The importance of this work to the industries, in reducing cost of labor turnover and to the individual worker in eliminating loss due to wasted time incident to a haphazard choice of an occupation, places the position of vocational counselor well up in the ranks of social service professions.

#### A DEFINITION

*A Junior High School is a school for grades seven, eight and nine, in which the work is departmental and in which the curriculum is enriched with industrial subjects dealing with fundamental industrial processes in addition to the ordinary academic subjects. It is a school that recognizes individual differences and attempts some steps for the guidance of pupils because of differences in the individual aptitudes, abilities and needs.*

J. A. STARKWEATHER.

## TOY-MAKING AS A COMMUNITY PROJECT

E. E. ERICSON

Supervisor of Manual Training, Okmulgee, Okla.

THAT the scheme of making Christmas toys and other articles in the manual training classes and selling them for the benefit of the Red Cross has ceased to be a novelty, particularly among the up-to-date teachers of industrial work, is



BRINGING IN THE TOYS FROM THE WARD SCHOOLS

no doubt well known to the readers of the Manual Training Magazine. The purpose of the work and the method employed in the production of the toys may vary greatly with different teachers and in different communities. The idea has too many possibilities in it from the educational and socializing standpoint to be



FOR THE LITTLE FOLKS

put on the shelf because the war is over or because the patriotic feeling toward the Red Cross may not be at quite so high a pitch as during the war.

When the Santa Claus shop idea was put in practice last year, in Okmulgee it was not primarily for the purpose of making money for the Red Cross, altho incidentally somewhat more than \$100 was realized from the sales. Nor was the foremost aim the making of toys to gladden the hearts of the little children whom Santa might otherwise accidentally pass by unnoticed, notwithstanding the fact that eventually more than 200 toys were used for this purpose. The aims for the work here may be listed briefly in the order of their importance as follows:



ROCKING HORSE AND RIDER

To create in the boys a genuine interest in the manual training work.

To instill in the boys the spirit of unselfish service to the community.

To develop an interest in the patrons and the public in general toward the activities of the schools.

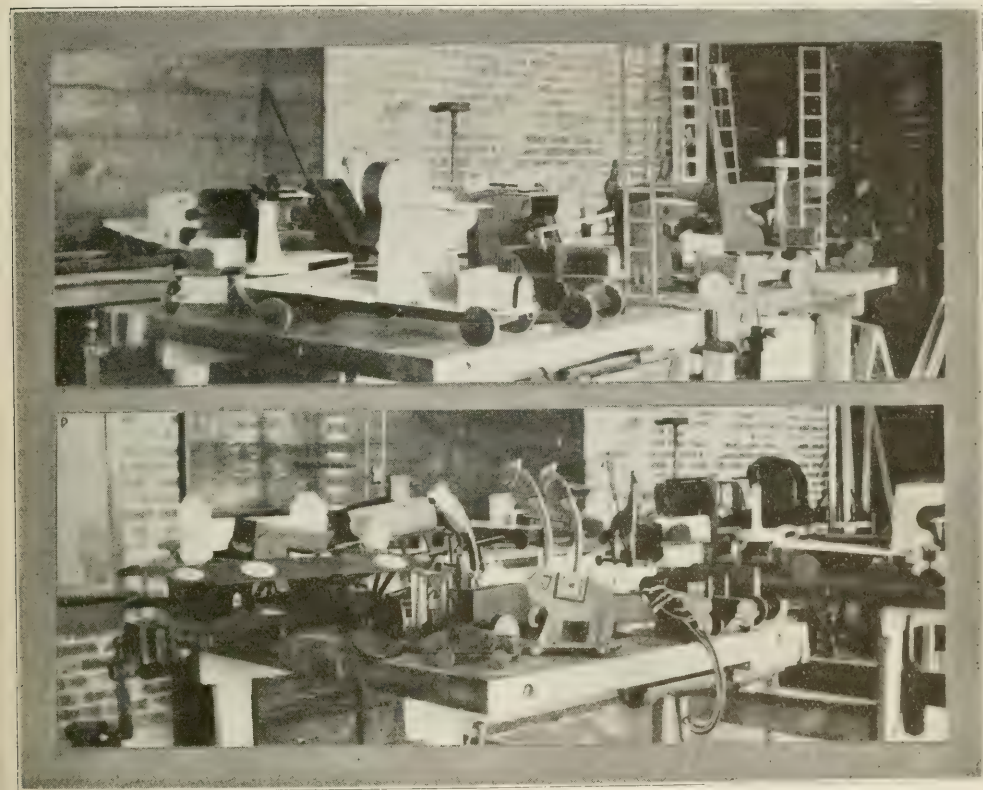
To contribute money to the Red Cross and a number of toys to the cause of charities.

For the proper realization of these aims it was decided to carry out the work for the most part by the individual problem method. Each boy agreed to make one



toy for the Red Cross and one for the poor children, and then he would make one to keep for himself; then he would start the circuit again. It was gratifying to notice that there was no disposition on the part of the pupils generally to pick out a better article to keep than those they had made to give away.

of the maker of each toy on the article so that when the toys were put out on tables preliminary to the sale those interested could come and examine the work of certain boys. About ten days before the sale an exhibit was put out in the windows of each of four of the best located business houses. These exhibits with



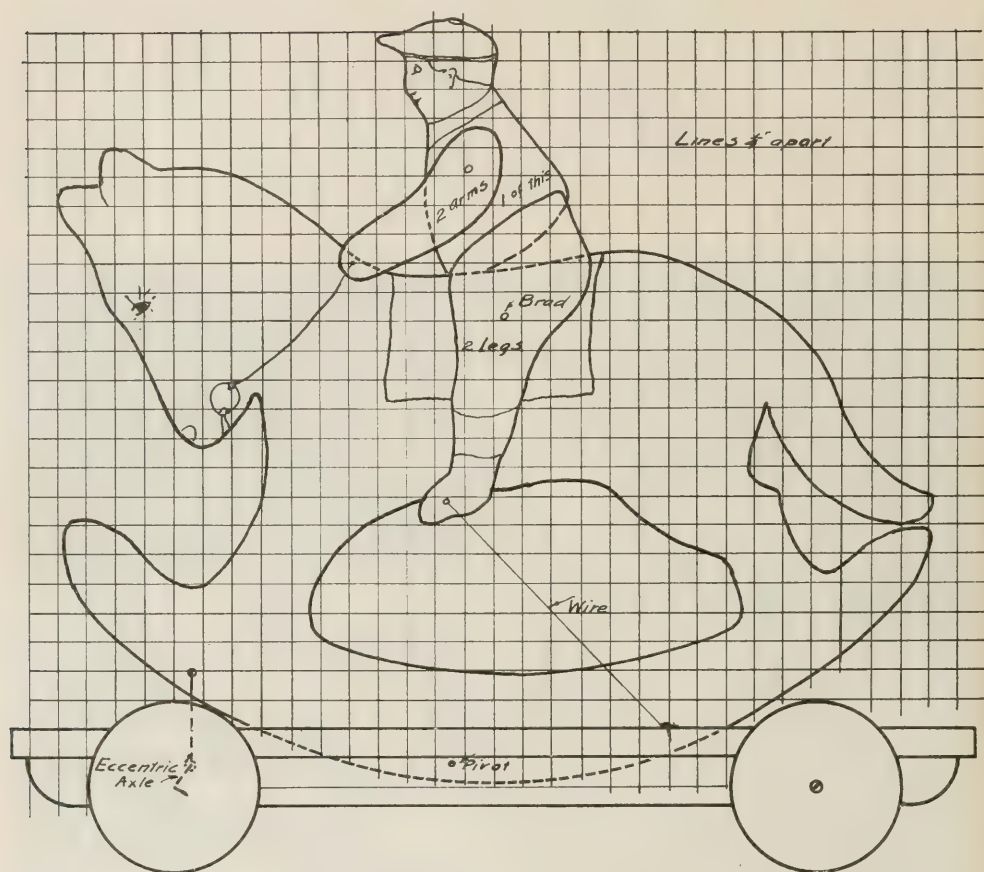
SOME OF THE TOYS READY FOR THE SALE

All materials for the construction of the toys were solicited as a donation from the business houses of the city. The lumber used was obtained from boxes which the boys gathered up. Nails, paint, water colors, etc. were generously donated by the different stores. Large tin cans were utilized for parts of trucks, automobiles, etc.

Another feature which helped to interest the public was the placing of the name

their placards telling the place and the date of the sale did a great deal to advertise the event. All the newspapers gave liberal support to the work so that the public was well reminded of what was to happen.

Then came the much-longed-for day of the sale—Wednesday evening Dec. 17. The toys were sold in the Y. W. C. A. Hall which is the most centrally located meeting place in the city. Preliminary to



ROCKING HORSE WITH RIDER

the sale, the Christmas cantata "The Toys' Rebellion" was presented by the children of the primary department of one of the ward schools. At 8:30 the auction sale began. One of the most popular pastors of the city and the secretary of the commercial club acted as auctioneers alternately. The hall was crowded to its fullest capacity and many people were unable to gain an entrance. The bidding was lively from the very first and by 10:50 o'clock nearly all the toys, more than two hundred in number, had been disposed of. Needless to say, many of

the boys were present to see what the toys would bring.

On Christmas Eve the big municipal tree was erected in the Council House Square. The school boys were asked to be present and distribute personally the toys they had made for the poor children. In this way they would lend a personal touch to their gifts.

It is well agreed here that this work did a great deal toward interesting the boys in their school work and also toward interesting the public in the activities of the schools.

## TOY-MAKING IN THE SCHOOLS

MICHAEL C. DANK

Instructor in Manual Arts, Brooklyn, N. Y.

AT THE time of our entrance into the World War in 1917, toy-making heretofore a crude and neglected part of our manual training work in the schools, became recognized as an activity possessing many sound educational values. The embargo on toys "made in Germany," together with the sudden impetus

addition to this playful activity, he is being taught the elements of proportion, design, and careful workmanship, and he develops an awakening interest in the industries that are based on the various materials and processes that come within his observation. Children have toys, the child is ever at play. But in



that toy manufacturing took on in the United States; the organization of the Junior Red Cross whose work is still assuming larger proportions; the conducting of numerous bazaars with wagon loads of excellent toys and vogue articles, all made by little children,—these are some of the factors that were instrumental in bringing about this marked development of toy-making in the schools of our country.

At this point it may be well to suggest a few of the educational values offered by toy-making as a part of the manual training work of the school. Psychologists always emphasize the play-spirit or child's point of view, as the ideal means of implanting in the child the rudiments of all education. What better illustrates this educational fact than toy-making as an industrial activity? When making

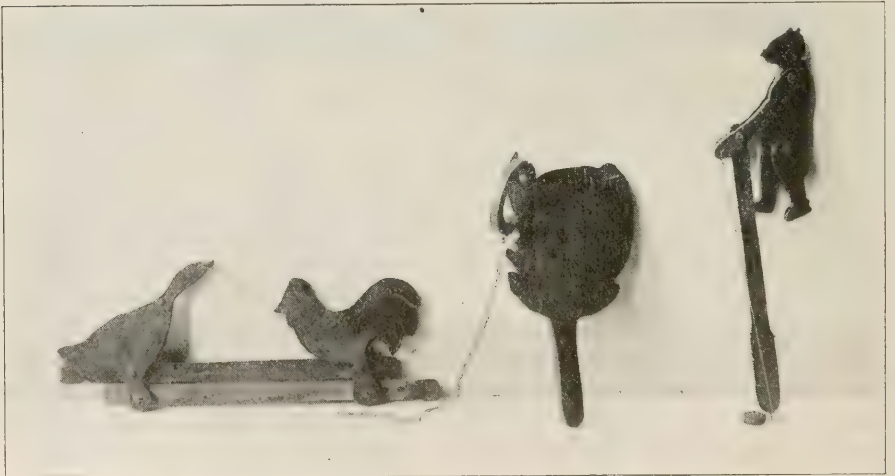
been rightly called the world's greatest imitators. In the making of toys they are enabled to give wont to their individual interpretations, in miniature form, of various vehicles of transportation, simple mechanical forms of motion and life in its multiple forms. Toy-making serves as an excellent forerunner to the more advanced manual training work taken up in the higher grades, inasmuch as the child of the lower grade becomes familiar with the simpler tools and processes in woodwork construction. Another important value of toy-making is its adaptability to the ordinary classroom and to the so-called "ungraded and crippled children."

A note-worthy question that seems prevalent at this time with respect to toy-making as a part of the school curriculum is this: At what point must we draw the



line in introducing it into the higher grades of the school? In other words, the question seems to imply that there is a possibility of overdoing toy-making at the expense of the other branches of

tirely upon the instructor in providing a well-proportioned course of study in which suitable divisions of selected toy problems and furniture and other articles are included. The toy problems in the



TOYS FROM "TOY PATTERNS" BY THE AUTHOR

wood-work construction, which include the making of various furniture and other household articles, in which the higher tool processes of joinery are dealt with.

The writer believes that the satisfactory solution of this problem rests en-

upper grades can be so designed as to necessitate in their construction the use of the regular shop tools and the study of the various principles of joinery. The adoption of these toy models should be determined by the pupil's own choice,

approved by the instructor, the season of the year in which the problem is to be made, the types of joints that make up its construction and the time allotted for its completion.

In order to distribute properly a series of toy models among the various school grades and thereby arrange a satisfactory course in toy-making, in which the skill and interest of the children are given due consideration, it is suggested that all the different types of toys be placed into significant groups. The writer emphasizes this very idea in his "Toy Patterns," which has just been published.

In the lower grades we may arrange such groups as, (a) jointed animals and figures, (b) lever toys, (c) simple vogue-articles, (d) string jumping toys, (e) rocker toys, (f) wheel-platform toys and (g) simple mechanical toys. Much care must be exercised in the selection of toy models which come within these groups. The children of the lower grades can use only a few of the simpler tools, such as the coping-saw and brad hammer, and the problems must be simple and within the range of their ability. In the sixth and seventh year grades, however, the

models chosen can be of the type that necessitate in their construction the use of the workbench with vise and the regular bench tools. A few good models for these grades are aeroplanes, cannon, derricks, truck and wagon, and games, such as marbles and ring-toss, etc. But when we come to the eighth year grades, we deal with children who are able to make and build a more practical type of toy such as kiddie-cars, large size aeroplanes, sleds, boats and yachts, etc. Much attention should be given to these larger toy models in the matter of the application of suitable finishes and decorations.

Surely, a course in woodworking that includes among a number of furniture and other household articles, a selection of toy problems such as suggested above, is broad in its scope, is productive of much interest among the children and therefore produces satisfactory results. It prepares them better to cope with their more complex problems in later life. A new meaning and delightful enthusiasm is thereby woven into the warp and woof of the manual training work of our schools.



MADE BY STUDENT AT BRADLEY POLYTECHNIC INSTITUTE

## PHOTOGRAPHS FROM EVERYWHERE



CLOSING EXHIBIT OF THE YEAR 1919-1920 AT THE HIGH SCHOOL, ST. CHARLES, MO.,  
HENRY E. SCHEMMER, TEACHER



A TYPICAL MANUAL TRAINING CENTER IN BOSTON.



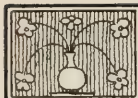
PHOTOGRAPHS FROM EVERYWHERE



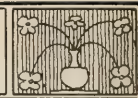
A CORNER OF THE MANUAL ARTS EXHIBIT IN JUNE AT THE HIGH SCHOOL, GRAFTON, W. VA.,  
A. B. STENGER, TEACHER



A PART OF THE ANNUAL EXHIBIT, COLLEGE OF INDUSTRIAL ARTS, DENTON, TEXAS.  
MARJORIE NIND, INSTRUCTOR



## EDITORIAL REVIEW FOR THE MONTH



### TOY-MAKING

SEVERAL months ago we received a letter from a man prominent in the field of vocational education deprecating the making of toys in the public schools. He did not give his reasons for taking that attitude but we think that we can guess what they were. We think he had seen toys that were carelessly put together, with little attempt to do a good piece of work. Perhaps he had been in a school where the toy-making hour was a kind of hilarious playtime for the youngsters. In all probability he had in mind toy-making at its worst, and was contrasting it with what goes on in the shops of his own efficient trade school.

If his picture of toy-making were the only one or even represented the most common condition in toy-making classes, we would agree with him that there is better business for Young America in school than such undirected or misdirected occupational work. But we are sure that there is quite another picture; and one that is far more typical of toy-making in the manual training classes of America. This picture shows boys working in a business-like fashion on something in which they are intensely interested. They are using tools as correctly as on other work; they are meeting a rather wide range of mechanical problems; they are doing more real thinking—and some of it of the creative sort—than is done in work that interests them less.

If, however, toy-making were to be continued thruout the year, and be the only type of work done, it would cease to be interesting and profitable; but continued for a few weeks, it has certainly justified itself for grammar grade manual training in the minds of teachers and supervisors who have taken it up ser-

iously and organized it with educational ends in view.

As mere play, toy-making is not justifiable in the public schools, but as educational manual training it is profitable, and is in harmony with the highest ideals in prevocational education.

The following statement came to us a few days ago in a letter from Stewart F. Ball, director of manual training in Buffalo, N. Y. (Remember that Buffalo is noted for its vocational schools.) Mr. Ball said:

While I thoroly believe that the handwork (wood-work) for boys in the sixth grade should be made as practical as possible, and that the pupils should be grounded in the fundamental principles of wood-work, I think that a good proportion of this work can well be devoted to toy-making. This type of work if carefully planned, will include all the fundamentals of sawing, squaring, planing, etc., and at the same time calls for greater initiative, and provides for the creative instinct so dominant in children of this age. We find, too, that boys are much more vitally interested in work which alternates the models of the regular course with various types of toys; and of course, interest is the vital factor in work for beginners.

### A SMITH-HUGHES GENERAL INDUSTRIAL SCHOOL IN OHIO

EVER since the passage of the Smith-Hughes Act we have been looking for an opportunity to report that a "general industrial school" has been established under that Act. There may have been several such schools established, but the first one concerning which we have been able to get definite information has just been opened in Kent, Ohio.

Last March, F. B. Bryant, then superintendent of public schools in Kent, explained the educational needs of certain boys in his community to a representative of the Ohio State Board of Education, and proposed the establishment of a general industrial school. A few days

later he received a letter from E. H. Heusch, state supervisor of industrial education, approving his plan and promising to recommend to the State Board that financial aid be granted for such a school, beginning with the new school year. This aid was to the extent of 100 per cent of the instructor's salary. The course was to be four years in length, the first three being full-time in school and the last a part-time cooperative year.

The recommendation included the following paragraphs:

a. During the first three years, 50 per cent of the school time be given to shopwork on a productive or useful basis.

b. That the first year and a half or two years, boys are to receive elements of woodwork as applied to carpentry and building trades,—the emphasis gradually being changed during latter part of woodshop period to pattern making.

c. The latter year and a half or year, the boys would spend in school machine shop to the extent of 50 per cent of school day. (This, of course, would require the installation of a complete machine shop equipment. This equipment would be most vital, as the present equipment contains no iron-working machinery, and Kent's industries are mostly of the iron-working type).

d. Since 50 per cent of time of first three years is to be devoted to school shops, it is required that the remaining 50 per cent of school time be apportioned so that 25 per cent of this time be given to related subjects—mathematics, drawing (at least 5 periods a week), etc., and the remaining 25 per cent to regular academic subjects—English, history, etc.

e. During the fourth year a cooperation between school and industries is recommended, the boys spending the 50 per cent shop time in factory shop and not in school shop.

f. The high school teachers will be expected to make practical application, as far as possible where academic subjects are taught. Such application can be made in physics, chemistry, etc.

g. Inasmuch as pupils of this vocational course are separately grouped in the shop instruction and related subject instruction, it is also advisable to group them together in the unrelated subjects, as English, etc.

h. Course to be open to all boys 14 years of age or over.

The recommendation resulted in favorable action at Columbus, and W. A. Walls, the present superintendent of schools in Kent, reports that the school was opened in September with seventeen boys—two more than was wanted. W. D. Stoner, who had been in charge of the manual training department, was selected by the state and local authorities to take charge of this new work. The first shop project was carried out at the mill of the Kent Lumber Co., and consisted of 8 teachers' cupboards for one of the school buildings.

We shall watch with special interest the development of this new type of school, for we are under the impression that it may prove to be very effective in some communities. If the plan of the school is defective because it does not meet conditions in cities under 25,000 population, for which it was planned, then the best way to discover these defects is to start more schools and demonstrate facts concerning them.

#### THE NEW YORK FEDERATION OF LABOR AND THE EDUCATIONAL FOUNDATIONS

**I**N OUR Field Notes column last month we published the statement that the New York Federation of Labor at its recent meeting at Binghamton had recommended the repeal of the charter of the Rockefeller Foundation. In support of this opposition to the Rockefeller Foundation and likewise to the General Education Board a committee of the Federation of Labor makes the following statement:

"Trade unionists and working people generally should be alert and extremely careful of the Rockefeller and other selfish money interests, and prevent their interfering in the preparation of courses of study or the selection of members of educational bodies."

The committee gives the following quotation from Frederick T. Gates, for-



mer president of the board, "to show that it is the intention of the board managers to control the education of the children of the masses!"

"In our dreams we have limitless resources, and the people yield themselves with perfect docility to our moulding hand. The present education conventions fade from our minds, and unhampered by tradition, we work our own good will upon a grateful and responsive rural folk. We shall not try to make these people or any of their children into philosophers or men of learning or of science. We have not to raise up from among them authors, editors, poets or men of letters. We shall not search for embryo great artists, painters, musicians, nor shall we cherish even the humbler ambition to raise up from among them lawyers, doctors preachers, politicians, statesmen, of whom we now have ample supply. The task which we set before ourselves is a very beautiful one, to train these people as we find them to a perfectly ideal life just where they are.

"So we will organize our children into a little community and teach them to do in a perfect way the things their fathers and mothers are doing in an imperfect way, in the homes, in the shops and on the farms."

On reading the above statement we were much surprised. It was so out of harmony with other statements that have come from the General Education Board that we made an investigation in order to find out just when and where such a statement was made by Mr. Gates. After considerable effort we found it in three sections in one of the "Occasional Papers" written by Mr. Gates and published by the General Education Board. The title of the paper was "The Country School of Tomorrow." In the first part of the paper Mr. Gates pictures farm life in the more neglected sections of the South and contrasts it with what is possible on the same soil, as has been proven by the farm demonstrator. He points out that the present deplorable condition exists in spite of the fact that in these same communities there has existed for years a public school system. He then asks the question, "Is there aught of remedy for this neglect of rural life? Let us at least

yield ourselves to the gratifications of a beautiful dream that there is." Then follows the first five sentences of the quotation. After three more sentences comes the sixth in the quotation, and the last paragraph is found four pages later in the paper, and quite out of connection with the earlier sentences.

We point this out in the interests of fairness and the better understanding between two groups of people who are working for better education—more democratic education—in this country. Moreover, it is known that the General Education Board often publishes opinions in its bulletins which are not the opinions of the majority of the Board, just as this Magazine publishes opinions in articles which would not be indorsed by the editors. They are printed in the interests of discussion that may lead to educational progress.

The following editorial in the *New York Evening Post* for August 25th entitled "Labor and the Educational Foundations" seems to us to be a just presentation of the case.

Except for its unwarranted attack upon educational Foundations, the education program of the New York Federation of Labor, as presented by the Education Committee at Binghamton this week, carries out the best traditions of this body.

Labor's pioneer work in public education deserves to be better known than it is. Not only is organized labor to be credited with much of the development of public education in the early nineteenth century, but in recent years labor's educational program has come to be more intelligent, more discriminating, more definite than that of almost any other non-professional group. Affiliation with labor of a number of forward-looking teachers who know both the technique of education and the attitudes of labor has brought an understanding of educational problems that is clearly reflected in the 1920 report of the Education Committee. The Binghamton program takes a firm stand against adult illiteracy; asks high professional standards for teachers and commensurate pay; urges health care for all children, and speaks an encouraging word for public forums in school

buildings at a time when such a word is greatly needed.

It is all the more regrettable, therefore, that the Education Committee should see fit to add to its constructive program an intolerant demand for the repeal of charters to educational Foundations on the ground that they represent an attempt on the part of the "Rockefeller and other selfish money interests" to secure control of the educational system and impose a "caste system" of schooling.

In supporting this demand with a patchwork quotation from a pamphlet on "The Country School of Tomorrow," written nearly eight years ago by Frederick T. Gates, former chairman of the General Education Board, the Education Committee is guilty of a practice it would quickly condemn in others. The words are indeed those of Mr. Gates, but removal from their original setting has completely reversed their meaning. Far from arguing for a "caste education" and the denial of opportunity, Mr. Gates was attempting to picture the kind of rural education in the South that would rejuvenate rural life in the hookworm districts and give every country boy and girl the opportunity he deserves. Right or wrong, Mr. Gates' philosophy was precisely that of progressive trade unionism: raising the economic level of the masses means the blossoming forth of literature, art, and all the finer things of life that are denied to a poverty-stricken people.

Labor has too many constructive tasks ahead of it to waste its energies on such adventures in demagoguery.

#### A TWENTY-DAY ROUND TABLE

PROFESSOR Dean of Teachers College has proposed something new. It isn't the first time, but this is a real departure. He proposes to put a credit course in the administration of vocational education in between the fall and spring semesters where there is ordinarily no time for anything. But the purpose of the course is so thoroly in harmony with the spirit of vocational education—gives a man the training he needs when he needs it—that Professor Dean believes that time for such training as he proposes will be created, or in other words, taken out of work time without loss of pay.

The idea behind the proposition is to open an opportunity in the winter for a short intensive course for men who can

come to New York for a month in the winter. The method proposed combines preliminary work before the course begins and then lecture, round-table discussion, job analysis, survey work and an intensive study of real problems. Before going to New York the prospective student will make a study of some approved subject; he will gather data and bring it with him to the class. At the college he will present his data and it will be the subject of discussion at the round table and will influence Professor Dean's lectures. He will visit schools in and near New York to get more data. At the close of the twenty-day round table he will probably attend the convention of the National Society for Vocational Education at Atlantic City, N. J., Feb. 23rd to Mar. 3rd, and then go back home better prepared for the remaining work of the school year.

#### FREDERICK H. EVANS SUCCEEDS PROFESSOR R. W. SELVIDGE IN ARMY WORK

THE development of vocational schools now taking place in the various Army camps of the country is going to be looked upon as marking a new period in the progress of industrial education, and the men who have been directing this work deserve especial credit. In many of its features their problem has been a new one, calling for originality as well as for engineering and pedagogic knowledge and skill. It surely has been a new one in its magnitude, and it has proved to be a new one in method, also. The man who has been the leading spirit in this development is Professor Robert W. Selvidge of the Research and Development Service at Camp Grant, Illinois. But on the first of June Professor Selvidge withdrew from the work in order to return to the University of Missouri, and in his place is Professor Frederick

H. Evans who was promoted from the position of development expert in the machine department at Camp Taylor.

Mr. Evans is the son of a gunsmith and mechanic and has lived all his life with tools and machines close at hand. He is a graduate in mechanical engineering at the State College of Kentucky. After graduation he spent several years as draftsman with a manufacturer of engines and with the Link Belt Machinery Co. of Chicago. He was instructor in mechanical drawing and later assistant professor of manual arts at Bradley Polytechnic Institute. While there he took his M. E. degree at his alma mater. In 1916 he accepted the deanship of the College of Industrial Science at Toledo University. In the spring of 1918, in addition to other duties, he was made director of the Army Training School at the University. In August, 1918, he was called to Washington to organize instructional material in gunsmithing, wheelwrighting, machine gun mechanics and battery mechanics. Meanwhile he had been serving as consulting engineer for the Ransom and Randolph Co. of Toledo, developing machinery for making dental burrs.

Immediately after the signing of the armistice Mr. Evans requested leave to go back to his consulting engineering work, and was granted it on condition that he would return to Washington, should the Government need him again. In June, 1919, he was recalled to Washington and assigned to the survey of the U. S. Engineer's School at Camp Humphrey, Va. After this was completed he went back to Toledo, but was again recalled in August to discuss peace-time plans with Secretary Baker, General Haan and General Rees. At the request of General Rees he was granted a leave of absence from the Ransom & Randolph Co. for one year beginning November 1,

1919. On this date he went to Camp Taylor as development expert in the machine department. Later he was assigned the task of gathering up machinery equipment for the Army schools. This was taken from Government-owned munition plants and warehouses. In February he was appointed educational consultant at Camp Taylor and had to do with estab-



FREDERICK H. EVANS

lishing the educational work there. In June, 1920, he went to Camp Grant to relieve Dean Selvidge.

On November 1st he is due to return to Ransom & Randolph Co. to fulfill his promise there, but it is our guess that he will not be allowed to remain very long in the engineering work. He is needed too much in the field of education.

#### FROM THE ENGLISH VIEWPOINT

THE September number of *Manual Training*, the official organ of the National Association of Manual Training Teachers in England contains an article on "Manual Training in the U. S. A.", which is more than usually interesting to an American reader. It is interesting because it calls for an emotional response.



The article is well safe-guarded: neither the writer's name nor the name of town concerning which he writes is revealed. One can easily infer that he was born and educated in London, trained there to teach manual training, and then, for one reason or another, came to America and taught for a short time in a city of considerable size in one of the North-western states. The contrasts he observe and the language he uses in pointing them out are what arrest the attention of the reader. It should be stated, however, that he is fair in his statements—he admits that his "experience was confined to a few months and to one town," and he does not claim that the system he found there is general throuth the country.

First, he speaks of the shop equipment:

My M. T. room was dark, dirty and ill-lighted, well supplied with tools, but had nothing in the way of decoration on the walls; no charts or diagrams, or even examples of work done or to be done. The equipment of the Center was ample, the quality of the tools excellent, and there were more tools than are usually considered sufficient, as well as a great deal of spare gear. The abundance of tools was rather embarrassing; it meant so much more work to keep them in order. The benches were rather small and it was possible to alter the height by means of rack and pinion to suit the size of the pupil; seats were provided in case the pupil became tired.

Of course we know that very few cities have benches of this type, but that unfortunately, and to our shame, there are many manual training rooms in the United States that are "dark, dirty and ill-lighted," but we have faith (and some facts) to believe that the proportion of this kind is decreasing. And what about the bare walls? Who is to blame? The school boards or the teachers?

When the writer comes to speak of design and quality of tools he is full of priase for the American. He says,

I cannot speak too highly of American tools, and if I could influence the authorities in England—which is impossible I know—to get rid of those antiquated and obsolete wooden bench planes and

replace them with up-to-date iron ones I would do so. Give them away, sell, burn, or pay some one to drop them in the Thames. The cost of iron planes is not much greater than the ones in use in England at present, as owing to the vagaries of the tariff, it is possible to get them at a much less cost tin, say, London than in New Britain, Connecticut where they are manufactured.

Quite amusing is his worrying over our method of projection in mechanical drawing. He says,

All drawings are made in the second dihedral angle and instead of a plan and elevation, as understood in English, the underside and front were drawn. When two elevations are required the left-hand view is drawn at the left and not at the right hand as it should be if properly projected.

As we never heard of anyone using second-angle projection for mechanical drawing except for disciplinary purposes in college classes in descriptive geometry, we are quite sure he must have mistaken our popular and practical third-angle method for a second angle method, and misread a top view for a bottom view. It is too bad he was not converted to the third-angle method while in America. By adopting it English schoolmen would simplify their elementary teaching of mechanical drawing, and English manufacturers would save money in their drafting rooms and in their shops. (We understand some of them have discovered this).

But the climax of the article from our standpoint is the author's observations concerning discipline:

Discipline was poor—what there was of it—and talking permitted. Of this I can only say—all the pupils talked some of the time, some of the pupils talked all the time, but all of them did not talk all the time, some of the time they shouted. No punishment was inflicted for anything. I suppose if a window were broken or a corner pushed off the school building the parents paid the bill and there was an end of the matter.

He does not indicate whether what he describes took place in his own class or in that of some other teacher. He allows us to imply that it could be found in all manual training shops. Perhaps it could

in that city, but we are sure that it could not in all Western cities. We are also sure that a large majority of the manual training work in America is not done in a shop where the discipline is as he describes. And we are equally sure that the best manual training work in America is not done under such restrictive discipline as one finds in some school shops in London.

On the other hand, our English friend has hit upon one of America's outstanding defects in its manual training work. Discipline in an American manual training shop depends upon two important factors. The first and most important is the teacher's sympathetic understanding of the boys and ability to inspire and interest them. The second is the general discipline of the school. Discipline, we say, is merely a means to an educational end. Our ideal is a workshop where every boy is busy on some worth-while work—so busy and so interested that he has no time for disturbing others. In striving for this ideal many teachers fall short, it is true; others do not. In certain London shops that we have seen, discipline was an end—the chief end, it would seem, and interest in the work was incidental. This was on the principle that order must come first; then interest will follow.

But the lesson of the article for the American teacher is, that he should have order as well as interest, whether we approach it from one standpoint or the other, and that too often we fail to get the one and sometimes the other also.

#### VOCATIONAL EDUCATION AND THE PROGRESS OF INVENTION

THE newspapers are pointing to the progress in the development of automatic machinery and are saying that machines will eventually solve the problem of labor scarcity. It is pointed out that one machine has been invented that will fill, wrap, and label 15,000 boxes a day and will

weigh the material used in filling the boxes. Others will assemble and wrap candies, rolling them into packages at the rate of 25,000 a day. Still others will automatically remove a cover from a box, place a product therein, replace the cover, label the cover of the box, fold a circular, place it around the box and fasten the container securely. And it is stated that even "more marvelous inventions are reported ready to take the place of human hands and do the work more perfectly and in greater volume, and all without a glance at the clock or a stop to powder its nose or rearrange its back hair."

Speed the day when such machines are common! We need never fear that there will be a shortage of monotonous jobs for human beings who are "born short". In mere mechanical operations human flesh can never compete with machines, and it will be a blessed release when normal human beings will be used only on human jobs. Then industrial education will be freed from some of its present handicap of competition with the factories in its effort to train boys and girls for jobs requiring qualifications beyond mere speed and mechanical accuracy.

#### THE INTENSIVE PLAN

THE editor of *The American School*, Carroll G. Pearse, has called the attention of his readers to the article on "The Intensive Plan of Organizing Manual Arts Teaching" published in our March number and elaborated by Mr. Backus in his article in the July number. After summarizing the plan he adds "On reading, the plan appears reasonable, and has much to commend it."

We judge from letters of inquiry received that this plan is being tried out in several places this year. We hope that any of our readers who are doing this will let us know the results of experience.

## A POINT OF VIEW

LAST month I brought out the limitations of the table d'hôte educational bill of fare. The schools have met these by developing a-la-carte service; i. e., the elective system. Here one may choose subjects, provided he definitely takes certain required work as, for example, English and some mathematics and science. In restaurant terms he must spend so much time and money on soup, fish, and salad but he may make his choice of meat and dessert.

For those who know what they want, based upon what they need, this elective plan is not bad. For those who choose on the basis of superficiality of thought or purpose the plan is poor. The table d'hôte left no choice. The a-la-carte necessitates an educational dietitian to make a square and balanced meal for pupils. In other words the a-la-carte service calls for educational and vocational guidance.

The elective system in high schools and colleges has sometimes failed because the students have read only the left hand side of the educational menu. They have selected Lobster Newburgs, *Pati fois gras*, Russian caviars and *Creme de Menthes*. They have not examined the right-hand side of the bill relative to cost of the same and when the items were added they could not face the cash register; i. e., the registrar or recording clerk.

Some persons less fortunate in leisure, pocket-book, and de luxe tastes, but more conscious of the time and purpose at hand have had to keep their eye on the cost side and we have done some mental arithmetic of what they could spend, glancing meanwhile across to the left side to see what, figuratively speaking, the 10 cts., 15 cts., 25 cts. would purchase. College professors and magazine editors are famous for running down the right

side and after selecting some 25ct. item they look across to see what they have chosen. Naturally those who have their expenses paid to conventions order their caviars and Newburgs.

Now I believe in restaurant table d'hôtes and a-la-cartes. I believe in educational bills of fare similarly devised. Both are a part of an educational democracy. The first type is, as pointed out last month, practically fixed. The second type offers everything from crackers and milk to a \$5.00 meal.

But the third type which I would emphasize now is the business man's lunch, or club breakfast plan of education service. This type has two differentiations—one where, like the club breakfast, the prices vary but the items of food are fixed for each price; the other, like the business men's lunch, where the price is fixed but there is a limited choice of equivalent items of food. In the club breakfast educational meal one may choose from several different courses, but once having chosen, there are definite items of subject-matter to follow. This is the plan of schools which offer unit trade courses. In the business men's educational meal one may choose a course such as commercial, technical, or academic, and is allowed some choice of electives of equal value which are within the confines of that course. Such is the plan of the technical courses in our cosmopolitan high schools. Figuratively speaking, all must take soup, there is a choice of one of two or three meats, a choice of two vegetables out of three named, a choice of ice cream *or* pie, then coffee, tea *or* milk. Woe be to the man who so reads the menu as to call for both cream *and* pie.

Both of these courses are steps towards democracy in education in that they fit



varying pocket-books of time values, provide some election based upon interest and capacity, and yet are so definite and purposeful that they function with vocational requirements. Probably the majority of the readers before me believe in the programs set forth by schools of dentistry, medicine, law, agriculture, technology. Very likely they support the aims and methods of courses for plumbers, carpenters, nurses, chauffeurs, embalmers, steam engineers, etc. These are business men's courses. One chooses his course and then sticks rather closely to what has been outlined for him. Figuratively speaking, it costs 60 cts., takes 30 minutes and is ready to serve. It has a definiteness and purposefulness all out of comparison with the so-called manual training or technical courses in many of our high schools where a pupil may elect all "over the lot" and, so long as he gets a total of so many credits or points, he may graduate. He must spend so many nickels of time and effort but there is little direction and guidance offered as to whether

he consumes ice cream, pie, pickles, pears, chops, soup, chicken, or fudge.

The club breakfast idea in education is a popular and successful venture. Here we have the winter courses in schools of agriculture, the extension courses of universities, and the special intensive or emergency courses. The student names his price; i. e., his time and purpose; the school offers him a course corresponding. It may, like the breakfast, consist of fruit, cereal, rolls, and coffee for 40 cts., or it may have fruit, ham and eggs, rolls and coffee for 70 cts. Figuratively speaking, you cannot split the order into ham *or* eggs, neither will it cost you less if you do not care for the cereal. The hotels and schools which serve such meals as I have described have studied their customers needs, their pocket-books, their time, and their capacities.

So far I have opened up four educational eating houses. Next month I shall hang out two more signs.

—ARTHUR DEAN.

*What the people need and demand is that their children shall have a chance—as good a chance as any other children in the world—to make the most of themselves, to rise in any and every occupation, including those occupations which require the most thoro training. What the people want is open paths from every corner of the state thru the schools to the highest and best things which men can achieve. To make such paths, to make them open to the poorest and lead to the highest, is the mission of democracy.*

—PRESIDENT BRYAN OF INDIANA UNIVERSITY.

## WASHINGTON CORRESPONDENCE

### RETIREMENT LEGISLATION BECOMES EFFECTIVE

**I**NTENDED to refer last month to the fact that legislation providing for the retirement and pensioning of employes in the Federal classified service became effective on August 21st. This is an event of more than passing interest, since it not only signalizes the culmination of a struggle lasting thru several decades, but also marks the beginning of a new era in the nation's employment policy.

Perhaps it were better to say that it is the first step in a move to establish a national government employment policy, for that term is still applicable to a hypothetical something that it is hoped may some day exist. The government service has grown, like many a private business, by a series of extensions, expansions, and accretions, until it is now an unwieldy, rambling sort of establishment that no one person can fully comprehend, much less direct effectively. It has never been unified or organized.

Nevertheless, after years of investigation and debate, one forward step was taken when Congress finally yielded to the argument for the need of some plan of retirement of superannuated employes. The Civil Service Retirement Act, approved by President Wilson on May 22, 1920, which became effective August 21st, provides that employes in the classified civil service who reach the age of 70 years, and have rendered at least 15 years of service, shall be eligible for retirement on an annuity.

### PENSIONS BASED ON LENGTH OF SERVICE

**B**Y SPECIAL provision, mechanics, city and rural letter carriers, and post office clerks are eligible to retire at 65 years of age, and railway postal clerks at 62 years, but the amounts of all pen-

sions are based on length of service. Six classes of annuitants are provided for, with maximum and minimum annuities ranging from \$360 and \$180 to \$720 and \$360.

Provision is also made for retirement for total disability under certain conditions.

### CONTRIBUTORY FEATURE OF THE PLAN

**I**T IS further provided that the Secretary of the Treasury shall deduct and withhold from the salary of each employe to whom this Act applies a sum equal to two and one-half per cent of his salary, deductions to be made at each pay-day. These sums of money are to be transferred on the books of the Treasury Department to a special fund, and the surplus invested from time to time.

Upon separation from the service before reaching the age of eligibility for a pension, the individual employe will be reimbursed, the sum of all deductions being returned with interest at four per cent, compounded annually. Further, if an annuitant should die before receiving in pensions a sum equal to the accumulation of his contributions, with interest, the balance will be paid to his estate.

### ADMINISTRATION BY THE PENSION BUREAU

**T**HERE are other features of interest, but my space is limited. The Act provides that the plan shall be administered by the Commissioner of Pensions, under the direction of the Secretary of the Interior. For this purpose a Retirement Division has been created in the Bureau of Pensions. The chief of the Division is John S. Beach, who was formerly connected with the disbursing office of the Pension Bureau. At present he has a force of 24 assistants.

When I talked with Mr. Beach a few days ago, I learned that up to that time 3,959 claims for annuities had been filed, of which 2,007 had been acted upon and approved. In addition, 651 claims for refund had already been received from persons separated from the service. Judging from the experience of the first few weeks, and from a study of available figures on turnover in the government service, Mr. Beach estimates that the Division will have to deal with 20,000 to 30,000 claims each year. He expects to catch up with the accumulation of claims by November 1st, and to be able to keep the work current thereafter.

The average annuity in these first 2,000 cases is approximately \$610. Payments are made by check, thru the disbursing office of the Pension Bureau, in the same way that pension checks are sent to soldiers and sailors, except that, while pension checks are sent quarterly, the retirement annuity checks are mailed the first day of each month.

#### EFFICIENCY OF THE SERVICE THE PRIMARY AIM

**T**HE Civil Service Retirement Act is designed primarily to promote the efficiency of the government service. The interest of the individual must always remain subordinate. Perhaps it is scarcely necessary to advertise this, however, since the annuities are so small in amount. The need of some such legislation is apparent in the personnel of the Pension Bureau itself, for at the time the law went into operation 202 out of the total force of about 850 were 70 years of age or over.

#### CHANGES AT THE FEDERAL BOARD

**A** NUMBER of important changes have taken place recently in the organization and personnel of the Federal Board for Vocational Education. Prob-

ably the most important of these is the abandonment of the five regional offices, which have been maintained for the administration of the Smith-Hughes Vocational Education Act, at New York City, Atlanta, Indianapolis, Kansas City, and San Francisco. The states have been regrouped into four regions,—(1) North Atlantic, (2) Southern, (3) Central, and (4) Pacific, and hereafter the regional agents will all have their headquarters in Washington.

All of the five regional agents for trade and industrial education have resigned during the past few months, and it has been necessary to organize a new staff. Harry B. Smith of the New York office goes to Teachers College for graduate study; Roy Dimmitt of the Atlanta office becomes the state director for vocational education in Maryland; Frank Cushman of the Kansas City office has been appointed director of the Lathrop School of Trades in Kansas City; K. G. Smith, formerly of the Indianapolis office becomes the state director for vocational education in Michigan; and Ben W. Johnson of the San Francisco office goes to Wilmington, Del., as director of vocational education for the city schools and state supervisor of industrial education.

In the reorganization, C. F. Klinefelter, a member of the staff of the Ohio State Board for Vocational Education, is appointed agent for Region No. 3, and H. A. Tiemann, from a similar position in Colorado, is appointed agent for Region No. 4. Announcement of appointments of agents for the other regions will be made shortly.

The position of director, which has been vacant since Dr. Prosser's resignation, has been filled by the appointment of U. W. Lamkin, who had been in charge of the vocational rehabilitation work. Mr. Hawkins becomes assistant director for vocational education; Mr.



Fisher, assistant director for vocational rehabilitation; and Mr. Carris, assistant director for industrial rehabilitation.

Under the Smith-Hughes Act, Mr. Wright is now designated chief of the industrial education service; Mr. Lane, chief, agricultural education service; Miss Richardson, chief, home economics education service; Mr. Nichols, chief, commercial education service.

#### INDUSTRIAL REHABILITATION

THE Industrial Rehabilitation Act, approved by President Wilson on June 2d, provides for the promotion of vocational rehabilitation of persons disabled in industry or otherwise, under the administration of the Federal Board. Mr. Carris, whose appointment dates from September 14th, has been at work on this problem for several months, and two bulletins have already been prepared, the first a statement of plans and policies, and the second relating to methods of organization.

As assistant to Mr. Carris, Frederick G. Elton has been transferred from the Boston office of the Rehabilitation Division, where he was supervisor of placement and training. Dr. Frank Harrison has been detailed from the Public Health Service to cooperate on the medical phases of the problem.

#### NEW HOME OF THE NATIONAL EDUCATION ASSOCIATION

YESTERDAY I called on Secretary Crabtree and found him in the midst of settling down in the new home of the N. E. A., at 1201 Sixteenth Street, at the corner of M Street. This is the property purchased by the Association some months ago, and just now vacated by the National Research Council. The Association does not require the entire building for the present, and so will sublet space for offices to the Mothers' Congress, and to the Swedish Legation.

—WILLIAM T. BAWDEN.

#### IN FOREIGN COUNTRIES

DURING the past month news has reached us of the death of three men in Great Britain who have been prominently identified with the introduction and development of manual training. These three are Sir William Mather, who died on September 18th, Solomon Barter, who died on July 19th and A. Sutcliffe, whose funeral took place on the same day that Mr. Barter passed away.

Sir William Mather has been prominently identified with the industrial development of Manchester, his native city, and has for many years been one of the representatives of Lancashire in the Government. He was the head of the great engineering and manufacturing works of Mather and Platt that has done great

service to the textile industry. To some of our readers he is known as the Liberal member of parliament and representative of the Royal Commission on Technical Education, who visited this country in the early eighties and became very much interested in Dr. C. M. Woodward's work at the St. Louis Manual Training School. In fact, he became a warm friend of Dr. Woodward, and invited him to England in 1884 to speak before the International Conference on Education in London and a few months later at a conference in Manchester. As a result of these conferences the Manchester Technical School established shopwork patterned after the St. Louis scheme. In 1886 Sir William Mather presented to Parliament a comprehensive resolution, urging the necess-

ity of extending the national system of education "in order to bring the teaching of natural sciences, manual training and technical instruction within the reach of the working classes." Thru the years since that time he has been identified with the development of education, having served on many boards and in official positions. He died at the age of 82 years.

Mr. Barter had been widely known in the profession as the chief inspector of manual training in the city of London. Of the several notices of his death we have selected the following from *The Schoolmaster* as being of greatest interest to our readers:

On 19th July, at Tilehurst, near Reading, there passed away quite suddenly Mr. S. Barter, who for many years occupied a prominent position in the educational world as a pioneer in the work of manual training in schools.

Born at Cranborne in 1854, Mr. Barter early in life came to London, and the fine cabinet-work in his home evinces his superb skill as a practical and finished craftsman. Employed in the late "eighties" by the Joint Committee of the City and Guilds Technical Institute and the School Board for London, he was in 1891 appointed by the L. S. B. as organizer and instructor in manual training. Commencing with the oversight of South London, his responsibility was subsequently extended to the whole of the metropolis.

An excellent craftsman and a man of high intellectual power, as advocate, exponent, lecturer and organizer, he threw himself wholeheartedly into the work, devised schemes of instruction, organized classes, and had the chief share in securing for manual training (especially woodwork) its place in the education of the young.

In 1904 he automatically passed over to the service of the London County Council, and after a time was appointed Inspector of Handicraft. He made liberal use of his pen, and his volume on woodwork, brought out in 1892, still retains its position as a standard work; he also produced a work on drawing. His unfortunate physical breakdown in 1913 naturally limited his activities thereafter, and about a year ago failing health compelled his retirement from office.

He leaves a wife and two daughters and an enduring record as a master and guide in the particular field which he made his own.

Mr. Sutcliffe, has been for many years,

the leading representative of manual training in Wales. He was the organizer of handwork and director of the Barry Summer Schools for the Glamorgan County Council. In 1911 he was chairman of the Conference Committee of the National Association of Manual Training Teachers that met at Cardiff and for a number of years he represented South Wales on the executive committee of that organization.

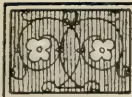
In referring to Mr. Sutcliffe *Manual Training* points to the "thousands of teachers who have passed thru the Barry Summer Schools" and have caught the spirit of his work.

#### SIR ROBERT BLAIR'S ESTIMATE OF MANUAL TRAINING

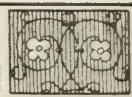
AT THE MEETING of the British Association held at Cardiff in August, Sir Robert Blair, head of the school system in London, presented the presidential address to the Educational Science Section. He gave an extended view of modern problems, especially from the viewpoints of science and administration.

In discussing teaching methods he calls attention to the increasing emphasis now being laid upon "mental and motor activities." He then goes on to say:

The progressive introduction of manual and practical subjects, both in and for themselves, and as aspects of other subjects, forms the most notable instance of this tendency. The educational process is assumed to start not from the child's sensations (as 19th-century theory was so apt to maintain), but rather from his motor reactions to certain perceptual objects—objects of vital importance to him and to his species under primitive conditions, and therefore appealing to certain instinctive impulses. Further, the child's activities in the school should be, not indeed identical with, but continuous with, the activities of his subsequent profession or trade. Upon these grounds handicraft should now find a place in every school curriculum. It will be inserted both for its own sake, and for the sake of its connections with other subjects, whether they be subjects of school life, of after life, or of human life generally.



## PROJECTS, PROBLEMS AND NOTES



### TOY-MAKING IN THE UPPER GRADES

**F**URTHER testimony to the value of toy-making as an elementary manual training exercise is the immense popularity of the toy-making course in the Colorado State Teachers College training

shellac. The wheels observable in a number of the toys were cut from compo and run on wire or nail axles. The little go-cart represents a really nice manual training problem, requiring a preliminary blue-print drawing of the sides and ends.



TOYS MADE IN TRAINING SCHOOL, COLORADO STATE TEACHERS COLLEGE

school. Tho purely elective, over seventy-five per cent of the students of the junior high school enrolled for the course during the winter semester last year and contributed largely to the annual toy sale, a section of which is shown in the accompanying photograph.

Toy-making calls into play the child's sense of design, his manual skill, and mechanical inventiveness, says Professor Edward Kaminski, the teacher of this group of children. There is no other school exercise like it for developing the whole boy.

The toys shown in the picture were cut with a coping-saw from compo board, except the standards which are for the most part of a light wood. They were painted in water-color and finished with

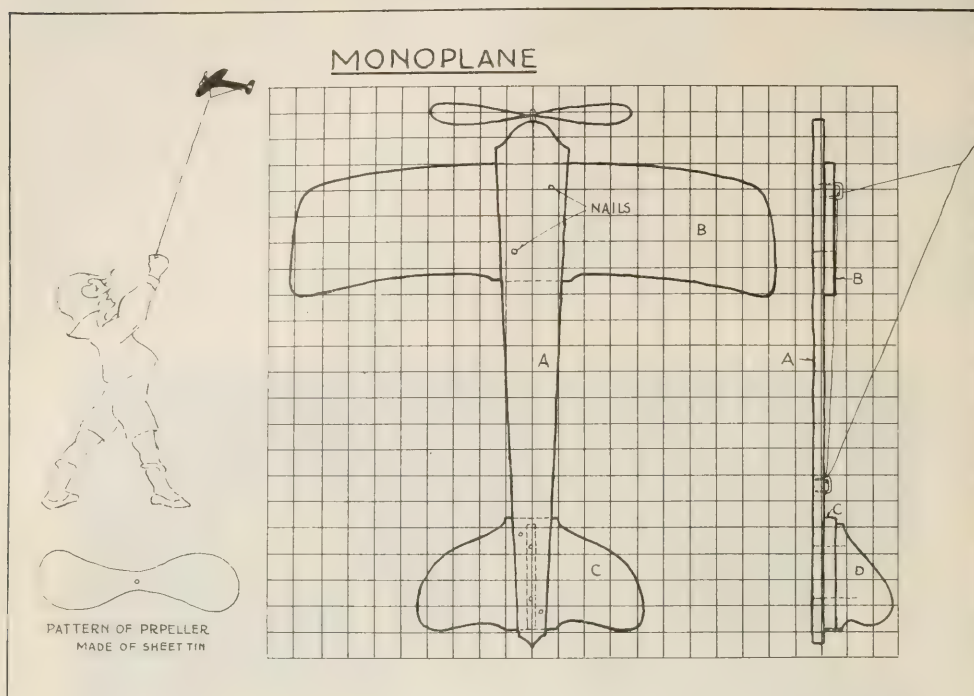
These were cut separately and then fastened into a frame by means of tiny wire nails. The policeman standing guard at the right of the table—the evident admiration of the eighth grade boy who came to the sale as a moneyed customer—is less an exercise of the mechanical and more of the artistic faculties; he is the original design of the little workman who fashioned him.

LOUIS GAUSS,  
Greeley, Colorado.

### THE MONOPLANE

**T**HIS interesting toy is made of  $\frac{3}{16}$ " stock. The pieces are cut out with a coping-saw and fastened with small brads. The brads used in fastening A and B together should be long enough to





clinch on the under side. The most difficult part of the construction is shaping the propeller which is first cut out of sheet tin.

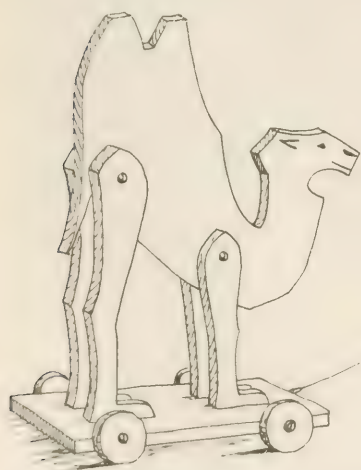
If the propeller is made right and the string fastened in the right way a boy

can whirl the monoplane around his head and have the thrilling satisfaction of hearing the hum of the propeller in action—the result of his own handiwork.

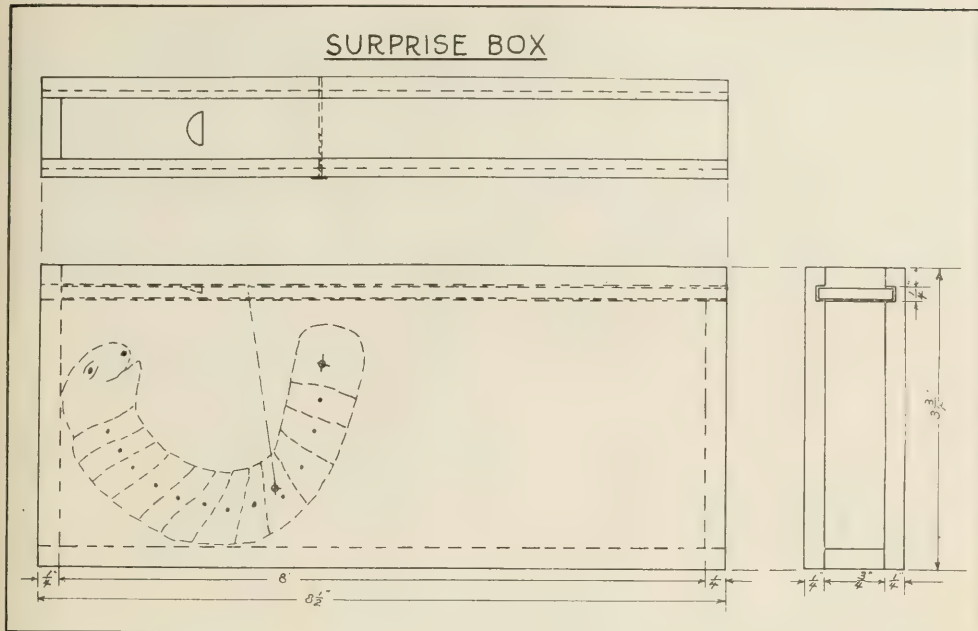
#### SUPRISE BOX

THE surprise box comes to us from E. F. Juergens, supervisor of manual training in Middletown, Ohio. He says of it, "The surprise box interested a large number of the freshmen high school boys, who made them outside of regular hours. The cover slides back, and the string causes the snake to come out and give the operator a rap on the finger. I present it because it interested my boys who think it a joke on the person trying to open the box. The cover should fit tight.

The snake is made of wood  $\frac{3}{4}$ " thick. At first I expected the wood to split, due to the grain, but I find that it is sufficiently strong. The corners are rounded with a wood rasp, making it almost



WHO WANTS A RIDE ON THIS  
SENSHINE CAMEL?



round. I painted red and green stripes on the body with the idea of giving plenty of color.

### THREE WOODWORKING PROJECTS

THE scooter shown in the accompanying plate of drawings is one of the problems used in Rochester, N. Y., under the supervision of Raymond C. Keople. The telephone shelf and the book sewing frame are from Cleveland, Ohio, where they have been in use in the public schools under the supervision of William E. Roberts. Each of these problems ought to be of real service to many teachers. Each makes its special appeal to certain individual students.

### THE COLD CHISEL THAT WILL STAND

THE following description of how to make a cold chisel was written by C. O. Hudson, an expert in forging and the heat treatment of steels. While traveling from place to place in connection with his work Mr. Hudson made it a point to visit high schools where forging

was being taught. In nearly every place he found that cold chisels had been improperly dressed, hardened and tempered. In this way he learned that many instructors did not know the right way to make a cold chisel. Having supervised the forging and tempering of many thousand dozens of cold chisels, punches, cape chisels and lathe tools for the hardware trade during the past fourteen years, and wishing to help raise the standard of school instruction in this particular, Mr. Hudson has written this article.

WE frequently hear these statements concerning a cold chisel: Too thin, won't stand, poor steel, too hard, too soft. Many times these ailments boiled down spell misuse. Think of this the next time you use or see a cold chisel used. Now to make a good cold chisel, the base is good tool steel, coupled with the knowledge of the nature of steel and its successful treatment.

I am here giving my experience of twenty years in the manufacture of chisels, punches and hand tools of all kinds.

First, we start out with a piece of octagon tool steel  $\frac{5}{8}$ " x 6". This is to be new and from a bar, (old steel is guess work.) This steel should cost

about twenty cents per pound. Square the ends on an emery wheel or by filing, heat and hammer one end as at A, Fig. 1. Be sure you hammer this square first; then hammer the corners, and then hammer round. If you hammer it round at the start it will nearly always split. In doing this, bring the metal to a yellow heat and finish at a black heat or as the red is leaving, seen in a shaded room. This cold hammering hardens the head, and enables it to stand hammering much better than if finished at a higher heat.

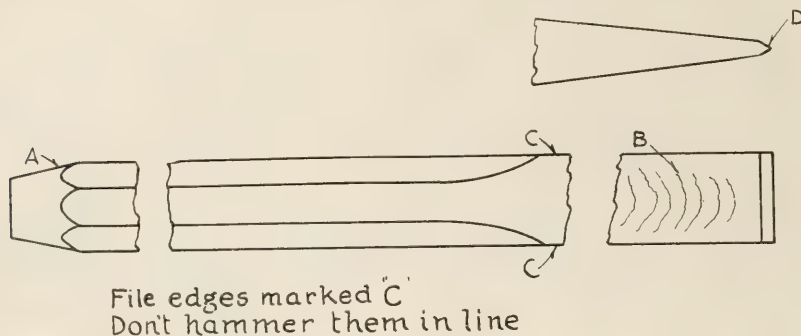


FIG. 1

Next comes the blade; heat the other end of the piece of steel, to a *bright red*, this should take about ten minutes to insure a uniform heat. This is absolutely necessary; if the steel is not uniformly heated, or as hot in the center as at the outside when you start to draw the taper, the outside will slide over the inside, and the chisel is right then junk, for when you have finished the hammering and put it into the hardening bath you will find on brightening the blade a number of semi-circular cracks across the blade like B, Fig. 1, usually on both sides and to a depth varying from  $\frac{1}{16}$ " to nearly thru.

Now we have the steel at a bright red and ready to hammer to the desired taper, lay the steel across the horn of the anvil close to the base and start to draw at the end of the steel. Use about a 2-pound hammer, and after each blow, which should be directly over the center of the horn, slide the steel away from you about  $\frac{1}{4}$ ". This places it for the next blow. After you have gone back about  $2\frac{1}{2}$ ", letting each blow diminish a little, put the steel back in the fire and heat to a *bright red* as before. This time turn the steel over, and hammer the other side the same as the one you have just done. You will not have to wait very long for this heat. These two hammer operations should bring the steel down to  $\frac{1}{16}$ " at the point. If not, repeat until you have it down to this size. Now heat again to a *bright*

*red*, and hammer with light blows the full length of the taper on each side. This work is done on the face of the anvil. Be sure you have about the same number of blows on each side, and that the weight of the blows are about the same. This will leave the strain in the steel about equal on both sides.

Now place the steel in the forge and bring slowly to a *bright red*. Leave at this heat about five minutes; then take it out and lay it some place free from draft until it is cold. This is to relieve the strain placed in the steel by hammering. If this

were not done, the tool is liable to crack when hardened.

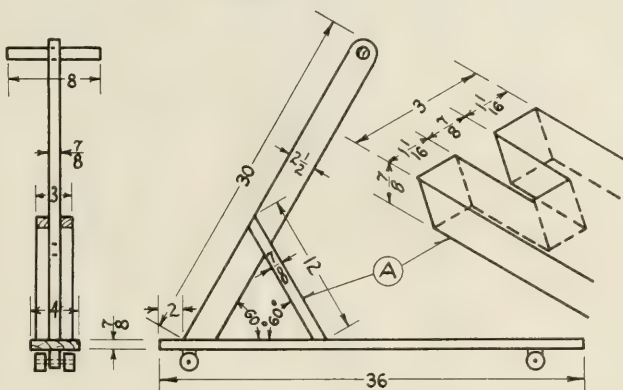
Now the chisel is cold; clamp it in a vise and cut the corners on the head with a file, and smooth the bit by draw-filing lengthwise. This should not be much of a job if you have taken care in your hammer work to finish smoothly. After you have both sides bright, file the edges so they are in line with the chisel as in C, Fig. 1. Do not file the flat sides crosswise, as this will have a tendency to make the edge or point break off at these file marks when hardened. Now file the bevel at about the angle shown at D, Fig. 1, and you are ready to harden and temper.

Place the bit of the chisel in a *slow clean* fire and give it time to come to a *low cherry red* about  $1\frac{1}{2}$ " back from the point; then dip in clear water about 1" down on the blade. Keep the chisel moving up and down just a little to keep from forming what is known as a water line. This occurs when a piece of steel is dipped in water and held stationary, and will crack off at this line. As soon as the chisel has cooled so the water remains on the part of the bit you have dipped, brush off the water and allow the heat to run down until the moisture has all gone; then brighten one side of the blade with a file, sandpaper or sandstone. The heat in the base of the chisel should be enough to draw the temper.

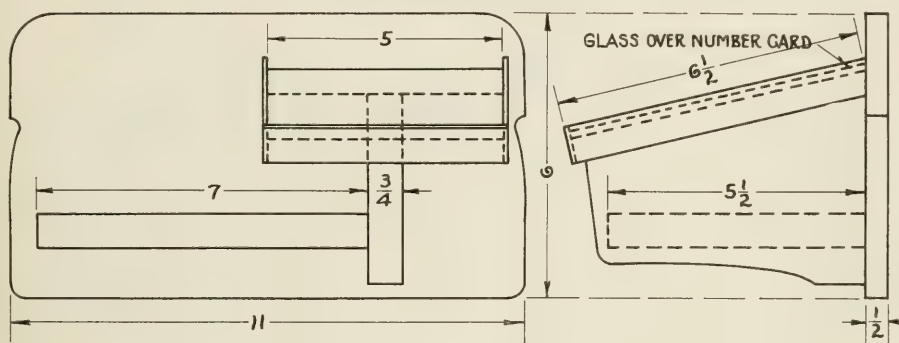
After brightening the side (this brightening opera-



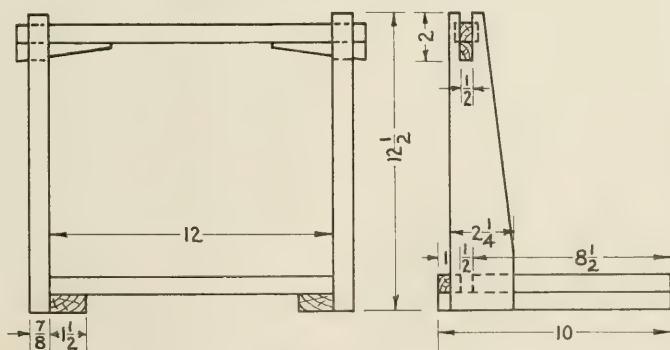
SCOOTER

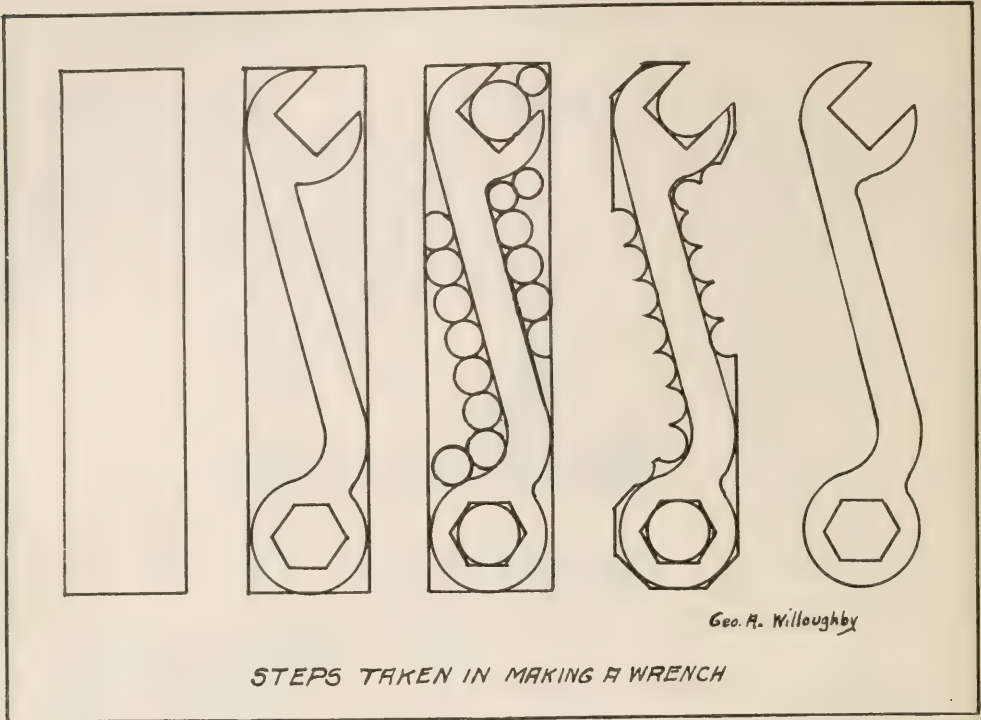


TELEPHONE SHELF



## BOOK SEWING FRAME





tion should be done as quickly as possible) you are now ready to watch the temper colors. As the heat runs down from the base you will first notice a straw color on the bright blade. Following in the wake of this will be the change to a brass, then to a copper, then to a dark blue, then to a bright or clear blue, (this does not mean a sky blue, but between a sky blue and a dark blue). A good way to tell the color you are after is to watch the dark blue until *all the copper color has disappeared*; then cool in water.

If you have followed these rules you now have a cold chisel 7" long that will cut any metal but hardened steel and chilled cast iron.

—C. O. HUDSON, Howard City, Michigan.

#### AN ELEMENTARY PROJECT IN METALWORK

**O**FTEN, at the beginning of the school year, we find it difficult to provide for all of the pupils immediately and we are forced to improvise some scheme whereby they can be taken care of properly with materials that are easily provided. The wrench project described below, giving excellent practice in beginning drill-press work and in the working of steel, can often be used with success. It is necessary only to furnish steel of the proper thickness and templates of the wrenches to be made.

In order to complete this project, a wrench or template is placed on the steel plate or bar and outlined with a scribe, prick-punch marks are placed at proper intervals, holes are drilled, and the wrench blank formed is ground and filed to its proper dimensions. The accuracy with which the prick-punch marks are placed will be shown beautifully, as will the accuracy with which the drill-press is manipulated, by the outline of the removed blank. If necessary, or if it is desired, some of the cutting work can be accomplished by the use of a hack-saw. There is, of course, some loss of material involved in this process but with judicious placing of the outlines it is not excessive. The shapes and sizes of the wrenches can be whatever desired for bringing out any particular type of filing or cutting.

Thus we see that with very little difficulty we have provided work that, when given properly, is very valuable, which results in a finished product of commercial value equal at least to the price of the raw material required.

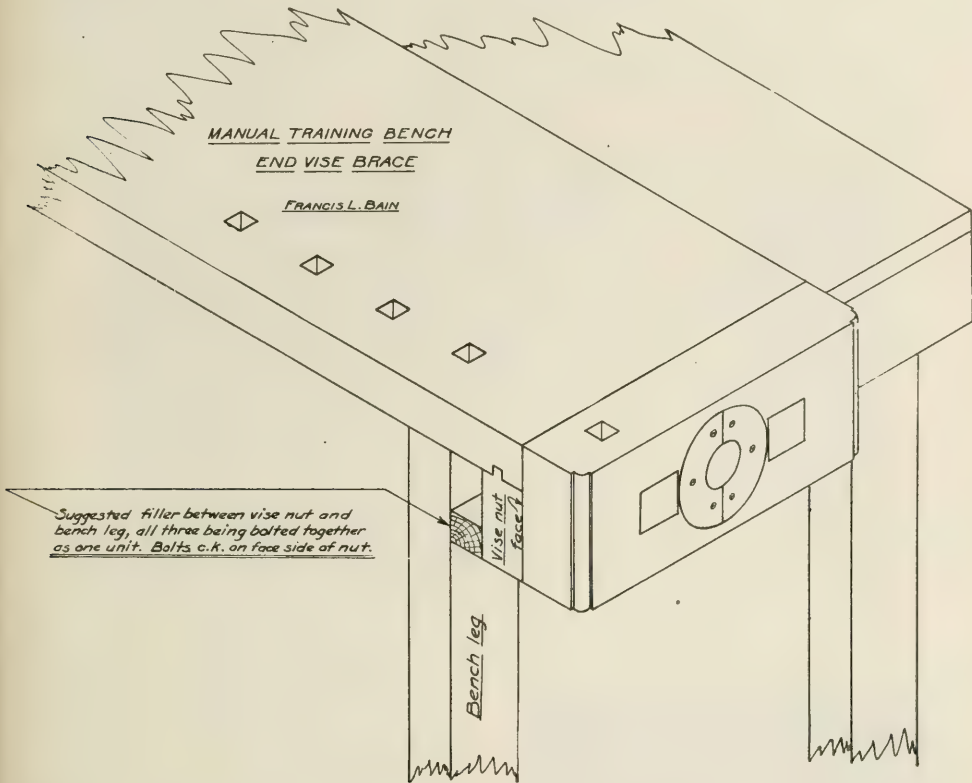
—GEO. A. WILLOUGHBY.

#### END VISE BRACE

It is quite probable that there are in use in the many manual training shops in this country thousands of benches which have wooden end, or tail vises, the screws of which engage in a hard-

wood nut extending from front to rear of bench. The method of attaching these nuts to the under side of the bench is such that they will often become loosened as a result of normal usage, and when that occurs the vise is usually out of alignment, and the screw, under the strain, will have broken threads.

nut. Its width should be just sufficient to allow the brace or filler to be inserted closely between the rear of the vise nut and the nearer face of the bench legs or top rail of end frame of bench. The thickness or height of the filler should be such as to allow the guide bars of the vise to pass freely back and forth. After being finished to size as



Many devices have been resorted to in order to render the vise serviceable again, such as cast iron nuts attached to rear side of hardwood nut, etc., but thus far none of these repairs have been directed toward the real base of the trouble—the need of bracing the hardwood nut and securing it more firmly to the bench. The suggestion conveyed by the accompanying illustration indicates the type of brace that will be supplied for benches in the schools of Boston, and an examination of the method shown will convince instructors of the surety of securing the much needed bracing and strengthening. This is not an experiment, for it has amply demonstrated its possibilities in a great many instances.

This brace is very simple, and consists of a single piece of maple or other suitable hardwood (preferably) with a length equal to that of the vice

indicated the filler should be placed in position as shown in the illustration, ready for assembly.

The vise should be removed, then centers for perhaps three bolt holes laid off on the face of the vise nut on a level with the center of the thickness or height of the filler. The vise nut should then be firmly clamped in its proper position (with an application of glue if needed) *after* which the vise nut, filler and bench leg or rail frame should be firmly clamped together as one unit. Then bore  $\frac{1}{4}$ " holes entirely thru the three pieces, at the center points already indicated, and countersink them on the face side of the vise nut for a  $\frac{1}{4}$ " countersunk head bolt, the length of which should be such as to allow the three parts referred to to be bolted together firmly. When properly bolted necessary strength is secured.

This method of bracing the vise nut not only

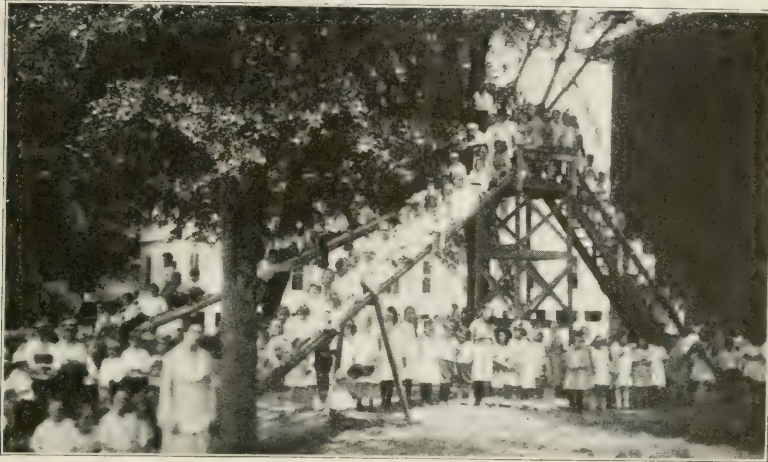




balls, wickets and stakes, Indian clubs, dum bells, bows and arrows, ball bats, a large double slide and many other things useful and ornamental. These students also made the frames for the scenery on the stage of the school auditorium, framed pictures for several of the schoolrooms, book shelves, sand boxes, etc. for the school and many useful articles for their homes."

*Question.* What is Circassian walnut and where does it grow?—J. J. A.

*Answer.* From the Century Dictionary you may learn that "Circassia is a district of Russia situated on the northern slope of the Caucasus and bordering on the Black Sea. The Circassian or Caucasian walnut tree (*Juglaus regia*) is native from the Caucasus and Armenia to the mountains of northern India." It is extensively cultivated and in some places naturalized in



MADE BY STUDENTS IN PUBLIC SCHOOLS, DE LAND, FLORIDA

### HOW TO DISTINGUISH MAHOGANY AND WALNUT FROM RED GUM

In the manufacture of furniture and cabinets a great deal of red gum is used as an imitation of mahogany or Circassian walnut. When red gum is properly finished it can be made to look so much like either of these woods that only by very careful observation can the true be distinguished from the substitute. There is a very distinct difference, however, between red gum and mahogany or walnut. This difference lies in the size of the pores.

In mahogany, Circassian walnut, and black walnut the pores are so large that they can be seen very distinctly on a smooth-cut surface of the end grain, where they appear as minute openings smaller than pin holes but visible without magnification. On the surfaced faces the pores appear as fine grooves, running parallel with the grain. They are even visible through the varnish, appearing as dark lines.

In red gum the pores are much smaller and can be seen only with a magnifying glass.

U. S. FOREST PRODUCTS LABORATORY.

temperate Europe and in America. The nuts cases, panel work, and other costly decorations." from this tree we know as English walnuts. The tree is also known as Persian walnut, European walnut and royal walnut. White walnut or butternut (*Juglas cineria*), Mexican or Arizona walnut (*Juglas rupestris*), California walnut (*Juglas californica*) and black walnut (*Juglas nigra Linn*) all belong to the same family.

Snow, in his *The Principal Species of Wood*, tells us that *Juglas* is from *Jovis*, signifying Jove's and *glans*, signifying an acorn. This nut, not the fruit of the oak, was the acorn of the ancients. Concerning the wood, he says:

"Circassian Walnut wood is distinct from common black walnut in that the color is not solid. There are large open figures, waves and streaks showing black with yellowish white. The rich effects and the scarcity of this product rank it with satinwood. It is used in piano cases, panel work, and other costly decorations."

## CURRENT PUBLICATIONS

*Vocational Education.* By David Snedden. The Macmillan Company, New York, 1920. Size 7¾ by 5½ in.; 587 pages.

This volume is a re-statement of Dr. Snedden's views on vocational education. It is a stimulating discussion of present-day problems. The author has deliberately given little attention to matters concerning which there is substantial agreement and has emphasized controversial issues. In doing this his style of writing has contributed materially to the accomplishment of his purpose.

In viewpoint and theory the book is not essentially different from his previous statements but it goes much further in indicating how the theory may be applied. It discusses principles of method, and then, in turn, agricultural, commercial, industrial, homemaking and professional education. It includes, also, the administration of vocational education, the training of teachers, special problems, future problems, and the practical arts as a factor in general education. Whether one accepts the author's philosophy of the relationship between vocational education and general education or not, he is sure to profit by a careful study of this volume.

Dr. Snedden points out that before the present movement vocational education had been "for the leaders" and therefore aristocratic. The problem he is trying to solve is "providing training schools for workers who toil in the unexalted callings of mine, farm, forest, shop, factory, shipboard and home," and in doing so to make the vocational training function effectively without impairing general education. On the other hand, he points out how general education may be strengthened.

Such a book is a contribution to the discussion of the great problem of developing education in America fast enough to meet vocational demands without sacrificing any of the real fundamentals of our democracy.

*Farm Shop Work in Pennsylvania.* By F. Theodore Struck. Special Bulletin No. 1 published by the Pennsylvania State College. An 85-page pamphlet illustrated with graphs and tables.

This is by far the most inclusive and helpful presentation of the problem of farm shop work that we have seen. It is "a study of repair and construction work as carried on by farmers, and as practiced in the vocational agricultural schools of Pennsylvania," made by Professor Struck and submitted in partial fulfillment of the requirements for a Ph. D. degree at Columbia University. It presents the results of a survey and gives conclusions based on facts revealed. The chapter headings are I. General Introduction, II. Findings on the basis of all farms studied as one group, III. Findings when

information secured was grouped according to the age of the farmers, IV. Findings on the basis of types of agriculture pursued, V. The teaching force and farm shop conditions, VI. Deductions and conclusions. An appendix gives lists of equipment, shop projects and a bibliography.

### RECEIVED

*Motion Picture Films of Educational Value.* A classified list issued by the U. S. Bureau of Education, Washington, D. C. Contains many that are valuable in teaching industrial processes and industrial occupations.

*Industrial Rehabilitation.* A statement of policies to be observed in the administration of the Federal Industrial Rehabilitation Act. Bulletin No. 57; issued by the Federal Board for Vocational Education, Washington, D. C.

*Survey of Junior Commercial Occupations.* Made by the Federal Board for Vocational Education thru State Boards for Vocational Education in nineteen states. Bulletin No. 54 issued by Federal Board for Vocational Education, Washington, D. C.

*Around the World.* A geography painting book for children. Issued by the Cunard Steamship Company, 21-24 State St., New York City. Price, 10 cts. On each left-hand page is a tinted drawing of some famous scene; on the right-hand page is the corresponding outline drawing ready to be tinted.

*Hack Saws and Their Use.* A 64-page illustrated booklet valuable to every user of hack saws. Distributed gratis by the L. S. Starrett Co., Athol, Mass.

*Industrial Instability of Child Workers.* By Robert Morse Woodbury. A study of employment certificate records in Connecticut. Issued by the Children's Bureau, U. S. Department of Labor, Washington, D. C.

*Timber Depletion and the Answer.* Bulletin issued by the Forestry Service of the U. S. Department of Agriculture.

*Course of Study in Manual Training* in the public schools of Portland, Oregon. By Fred M. Groshong supervisor. Contains outline of course in household mechanics.

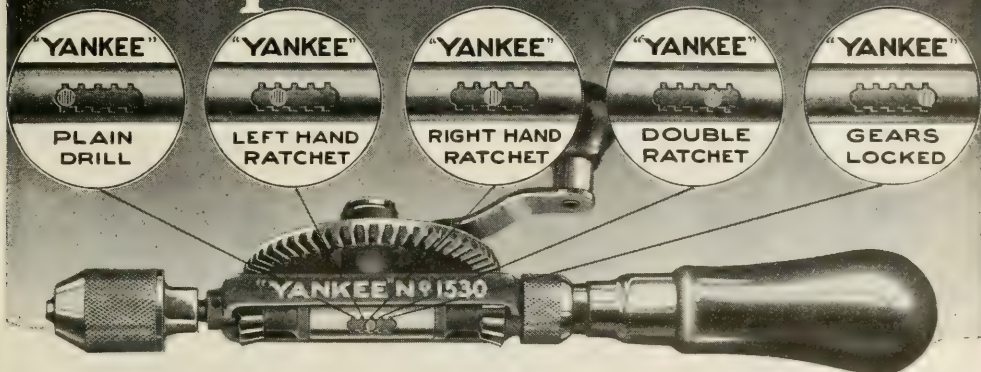
*Twentieth Annual Report of the Director of Education in the Philippine Islands.* An illustrated report of 167 pages, giving considerable space to industrial education. Published by the Bureau of Education, Manila.

*Report of Trade and Industrial Education in North Carolina.* Issued by the State Board for Vocational Education, West Raleigh, N. C.

*State-aided Evening Vocational Schools.* Bulletin issued by the New York State Department of Education, Albany, N. Y.



# Multiplies Man's Power



## Where Other Drills Are Useless!

That's exactly where the "YANKEE" Ratchet Hand Drill excels! On "impossible" jobs—where cramped space, obstructing pipes, or the like, prevents your using an ordinary drill.

No drilling job is impossible for the "YANKEE" Ratchet Hand Drill—as long as the drill point can reach the spot where the hole is required—and there is room to move the crank even an inch.

The DOUBLE RATCHET does it! It transmits the slightest motion of the crank to the drill—and keeps it cutting continuously.

## "YANKEE"

### Ratchet Hand Drill No. 1530

Length, 10½ in. Weight, 1¼ lbs.

Capacity, up to  $\frac{3}{16}$  in. drills.

Your Dealer Can Supply You



*Students anxious to advance rapidly should use the "YANKEE" Tool Book as a constant reference. It's chock full of pictures and descriptions of the most modern ways of drilling metal, tapping, boring in wood, and driving screws. Write for it today. It's free.*

Pictured above is the "YANKEE" Ratchet Shifter, showing the five different adjustments. A finger-touch gives you any of these—

1. Plain Drill
2. Left-hand Ratchet
3. Right-hand Ratchet
4. DOUBLE RATCHET
5. Gears Locked

### These Handles Never Get Wobbly

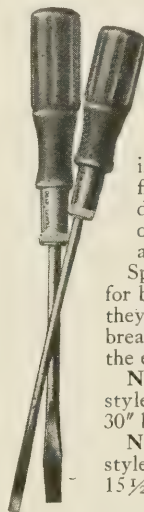
To all intents, a "YANKEE" plainscrew-driver is all one piece.

Blade is anchored in handle to STAY—firm and rigid—under the hardest kind of use — and even abuse.

Special steel is used for blades—tempered so they will never crack, break, twist, or bend on the edge.

No. 90—Standard style, 15 sizes, 1½" to 30" blades.

No. 95—Cabinet style, 11 sizes, 2½" to 15½" blades.



NORTH BROS. MFG. CO., Philadelphia

# "YANKEE" TOOLS

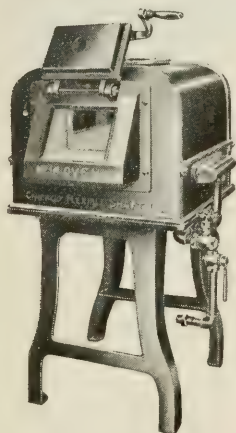
*Make Better mechanics*



Address our Educational Service Department.

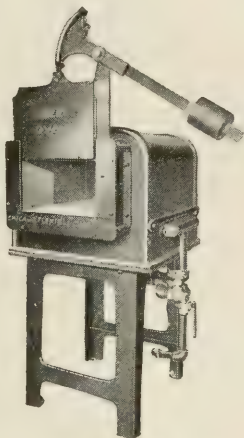
**CRESCENT**  
*Make Good Belts Give Better Service*  
**BELT FASTENERS**

# Heat Treating Equipment Must Be Right



Stewart  
**No. 14 OVEN FURNACE**  
For High Speed or  
Carbon Steel

Size of opening, 6"x10"  
Depth, 15"  
Floor space, 34"x36"  
Gas and air connections, 1 1/4"  
Shipping weight, 1210 lbs.



Stewart  
**No. 2 OVEN FURNACE**  
For Carbonizing Annealing  
and Heat Treating

Size of opening, 8"x14"  
Depth of chamber, 18"  
Floor space, 36"x40"  
Gas and air connections, 1 1/4"  
Shipping weight, 1650 lbs.



Stewart  
**ROD END FORGE**  
For Light Forging and  
Tool Dressing

Size of opening, 2"x10", giving  
spot heat of 8"  
Floor space, 24"x24"  
Gas and air connections, 1 1/4"  
Shipping weight, 430 lbs.

Because *Stewart* furnaces are scientifically made and practically constructed they are universally favored by supervisors of industrial education. That is why *Stewart* furnaces are recognized as standard equipment for elementary manual training shops, industrial and vocational schools, and university engineering departments.

Because *Stewart* furnaces have stood the test in every branch of industry where heat treatment of metals is a factor they appeal to the vocational student, for he knows his equipment is the best that can be made. He takes pride in his work, because he knows the *Stewart* way is the successful way.

Our engineers can offer valuable suggestions for the installation of new equipment in vocational school shops. Send for our Catalog No. 75, giving complete data on *Stewart* furnaces.

## Chicago Flexible Shaft Company

1128 S. Central Ave., Chicago, Ill.

350 Broadway,  
New York City

Railway Exchange Bldg.  
St. Louis



**IMMEDIATE  
DELIVERY ON**



## **Drawing Instrument Sets**

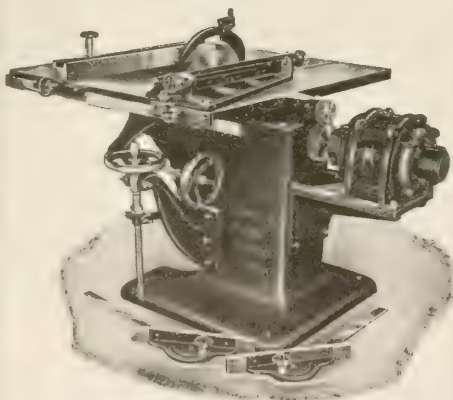
WRITE FOR CATALOG AND  
PRICE LIST TODAY.

DO NOT DELAY YOUR ORDERS—  
SUPPLY LIMITED.

**FREDERICK POST COMPANY**

Dependable Supplies for  
Engineers, Architects and Schools.  
**CHICAGO**

## **SAW TABLES** For MANUAL TRAINING



This cut shows our motor driven, spiral gear saw table. No countershaft, no belts. Tilting or stationary tops. Write for circular and prices on our entire line. Address

**ALEXANDER DODDS CO.**

451-453 Monroe Ave., N.W.  
GRAND RAPIDS, MICHIGAN, U. S. A.



### **FIELD NOTES—Continued.**

Teachers' College, and the year following was a research scholar at Columbia university. He is a native of Indiana and taught in the public schools there for several years.

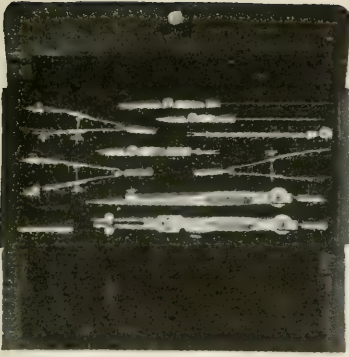
AMONG THE INSTRUCTORS in the new continuation school at Lawrence, Mass., are the following: Lewis R. Thompson, a carpenter who spent two years at the New Hampshire State College; Arthur E. Conner, a foreman carpenter and a veteran of the world war, who was at one time a student of the Massachusetts Institute of Technology and has had several years of practical experience; William Elliott Jr., a machinist and draftsman who has taught the repairing of automobiles and gas engines, has held several good positions in industry and was for a time in the Charlestown Navy Yard; Frank Phillips, also a machinist, who has been in the Navy and in industry; and Havin S. McCrillis, an electrician with two years' training at the Massachusetts Institute of Technology and some practical experience.

A PRACTICAL COURSE in boxing and crating is being taught at the Forest Products Laboratory, Madison, Wis. The course covers tests of various types of box construction, tests of nailing, strapping, influence of grade of lumber and location of defects on boxes and crates, etc. Why should not the principles of boxing and crating be taught in a manual training course?

THE ROCHESTER, (N. Y.) Shop Evening School reports a new policy in the drafting department. A class has been organized especially for men who have been at the tool-making trade or in a drafting room for more than two years. "This class was filled the first night, as foremen of large manufacturing plants had advised their boys to take the course." There is also a class for beginners in this trade.

FIGURES FLATTEN out so when they get beyond our experience! The imagination finds difficulty in reaching out very far into the unknown. For instance, can you comprehend this statement? We are told that already in France alone, 134,000,000 cubic meters of trenches dug during the war have been filled up.

AN UNFORTUNATE ERROR crept into this department last month when we stated that it had been announced that Dr. John C. Merriam of the University of California had accepted an appointment as head of the Carnegie Institute of Technology. It should have been of the Carnegie Institute at Washington, D. C. Dr. A. A. Hamerschlag is president of the Carnegie Institute of Technology at Pittsburgh, Pa.



## Mechanical Drawing Outfits

Set as Per Photo, \$6.00

We have 300 sets to offer at the above price. Send in your order now—so you will get them at this price. All solid nickel silver and steel construction. Save 200 per cent and order to-day.

**National Instrument Company**

4517 North Lawndale Ave. Dept. C

CHICAGO, ILL.

### TRADE NOTES

PROPER PROVISION for sharpening edge tools is a phase of equipment often neglected in the manual training shop. The Mummert-Dixon Company, of Hanover, Pennsylvania, for a period of ten years, have made a careful study of this field, and have developed a line of oilstone grinders adapted for the various shop needs. These grinders are modern machines, combining all the features desired for a tool sharpener and general grinder. They consist of five wheels, coarse oilstone wheel, fine oilstone wheel, grinding cone, leather wheel, and emery wheel, all in a compact, convenient machine. With one of these grinders in your shop, the sharpening and care of edge tools can be successfully taught, and your edge tool equipment easily kept in good condition.

EVERY MANUAL TRAINING TEACHER has experienced difficulty in obtaining certain materials especially such as suitable cabinet hardware, tea wagon wheels, morris chair fixtures, pulls, knobs, cushions, etc. This difficulty is easily met thru the service rendered by the Thurston Manual Training Supply Company of Anoka, Minnesota. This progressive company has recently published their annual catalog of "Hard-to-Get" Materials. It lists materials needed by every manual training teacher and in an attractive and convenient form.

## Build Your Own PHONOGRAPH

Instructive—arouses pupils' enthusiasm—provides one of the best problems in cabinet making.

Let Your Pupils Build Choraleon Phonographs

We furnish, plans, blue prints, motors, tone arms, case material—in fact, everything required. Full instructions. Choraleon's have fine tone. Play any record.. Ask for particulars



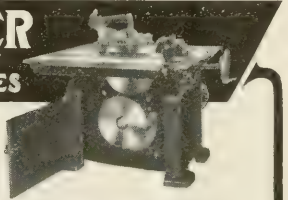
**CHORALEON PHONOGRAPH CO.**  
920 7th St., Elkhart Ind.

## MITER SAW BENCHES

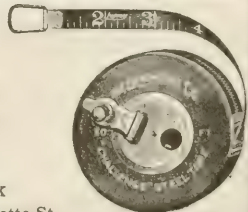
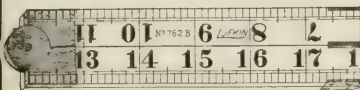
The "Tannewitz" Universal Double Revolving Arbor

Saw Bench with Sliding Table and Taper Pin Gauges is the only logical tool for the wood shop where frequent setting up is the rule and accuracy is the goal. Send for bulletin.

**THE TANNEWITZ WORKS**  
GRAND RAPIDS, MICH



# LUFKIN



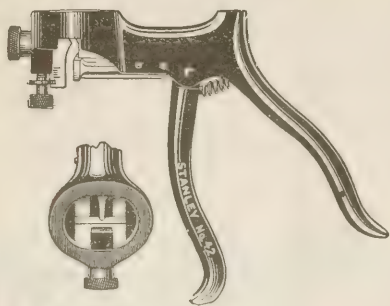
**STEEL and WOOD RULES - - MEASURING TAPES**  
Complete high grade lines

On Sale Everywhere. Send for Catalog.

SPECIFY—**LUFKIN**

**THE LUFKIN RULE CO.** Saginaw, Mich. New York  
No. 106-110 Lafayette St.

**Stanley  
Tools**



## Stanley "Pistol Grip" Adjustable Saw Set No. 42

### Of Special Interest to Manual Training Schools

This Saw Set embodies several unique and important features not heretofore seen in tools of this description.

The shape of the Body and Handle enables the user to operate the tool with great ease and with the least possible exertion, and the Saw is held firmly against the gauge while the tooth is being set.

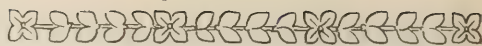
It can be readily adjusted by means of the knurled thumb screw to give a greater or less set to the teeth of the saw, according as the saw is to be used for coarse or fine work. As the anvil or part against which the plunger works is graduated, the same adjustment can be easily obtained for duplicate work.

The tool is so designed that the saw teeth are in plain view which enables the user to quickly adjust the tool to the tooth to be set.

The plunger and anvil are made of tool steel—hardened and tempered. All parts are carefully machined and are interchangeable.

The tool is given a fine black finish.

**THE STANLEY RULE & LEVEL PLANT.**  
THE STANLEY WORKS  
NEW BRITAIN, CONN. U.S.A.



### TRADE NOTES—(Continued)

Write for a copy and keep at hand for easy reference. You will find it well worth while.

DRAWING TEACHERS like publishers know the present cost of paper and difficulty of securing it. A helpful solution is the new "sample book of drawing and tracing paper" and catalog of drawing instruments put out by The Frederick Post Co., Chicago, Ill. This well-known firm carry a complete line and will be glad to send a copy of their new sample book to every mechanical drawing teacher who requests it.

TEACHERS OF WOODWORKING, and particularly those using Prof. Van Deusen's "Demonstrations in Woodwork" will be glad to learn that lumber ready for the work is kept in stock by The Kent Lumber Co., Kent, Ohio, from whom it can be secured in bundle lots as needed. Teachers in consolidated rural and village schools, experiencing difficulty in securing suitable lumber for the work, should bear this in mind.

FOUNDRY TEACHERS should acquaint themselves with a new product now put out for the first time by the Oliver Machinery Co., Grand Rapids, Michigan. It is an All Steel, Self-Releasing Snap Flask. It is of simple yet strong construction, rigid and free from the liability to bulge or become racked out of shape and is said to be practically indestructible. It has a number of unique and valuable features which are new and which will readily commend themselves to the experienced teacher of foundry work. A special circular describing and illustrating these new flasks is available for the asking.

EVERY TEACHER of pattern making should write for a copy of "Supplies for the Pattern Maker," a new catalog by the Adams & Nelson Co., 1328 West North Avenue, Chicago, Ill. This firm make a specialty of all material and machines needed for pattern making, from fillets to lathes. In fact, the various materials and equipment listed are so comprehensive that the wood-shop teacher, whether teaching pattern making or not, will find this catalog very desirable. It is well illustrated and completely indexed. A copy will be mailed on your request.

## TOOLS

For Manual Training Shops.  
Send your inquiries to and get the especially low prices quoted by

**MONTGOMERY & CO. Inc.,**  
105 Fulton Street New York City





## CLASSIFIED ADVERTISEMENTS



*Do you want to sell or want to buy some school shop supplies? Do you want to employ a teacher? Do you want a new position? Advertise your wants in these classified columns. Rate 20c a line, minimum \$1.00.*

### SCHOOL SHOP SUPPLIES

**ELECTRIC GLUE HEATER**—Best for manual training shops. Economical, safe, reliable, no burnt glue. Many shops are already using them. Two pt. size \$8.00. 3 pt. size \$8.50. Complete with 6' cord. For **extra low heat** feature \$1.00 extra. State voltage required. Safety Glue Heater Co., Faribault, Minn.

**SOLDERING TOOLS**—Gas and Air. New designs that lend themselves to greater speed of operation and much higher degree of precision in work, coupled with greater ease of operation and a marked economy in gas. We will make special rates to schools on student equipment for both bench and portable work. Descriptive circulars. L. B. Allen Co., Inc., 4584 N. Lincoln Street, Chicago, Illinois

**"HARD-TO-GET" MATERIALS**—Here they are—Chest trimmings (coppered bands, nails, locks, cover supports, handles, casters, etc.), tea wagon wheels and casters, nifty pulls, upholstery supplies, etc. We make any size cushion for your piece. New catalog. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

**CUSHIONS**—You know your cushions will be made right when furnished by the Grand Rapids Cushion Company. Write for estimates on cushions and all kinds of upholstery supplies. Grand Rapids Cushion Company, Grand Rapids, Michigan.

**"HARD-TO-GET" MATERIALS**—Here they are—Tray and picture mouldings, tray handles, wood lamp shades and art glass, dowels, screen hinges, etc., etc., upholstery supplies. Any size or style cushion for your chair or davenport. New catalog. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

**HICKORY CHAIR SPLINTS** a substitute for high cost materials for chair bottoming. Fifty seats, postpaid, \$5.00. Trial order of 20 seats, \$2.00. David Hardin, Hawesville, Kentucky.

**"HARD-TO-GET" MATERIALS**—Here they are—Nifty pulls and catches, costumer hooks, mirrors, leather and imitations, upholstery supplies, tea wagon wheels, etc., any size or style cushion for your chair or davenport. New catalog. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

**GRANDFATHER'S CLOCK**—Blue prints, finishing material and instructions. Also works, dial, weights and pendulum can be purchased from us at surprisingly low prices. Send for particulars of our attractive offer. Clock Company, 1666 Ruffner St., Philadelphia, Pa.

**ROOF FRAMING TABLES**, Griffith. A remarkably convenient device for use in framing the various members of square and rectangular roofs. The tables are printed on cards to be used in connection with celluloid container. Complete instructions to accompany. All contained in attractive case. Price, \$1.50. The Manual Arts Press, Peoria, Ill.

### MANUAL TRAINING LUMBER

**MORGAN MANUAL TRAINING MATERIALS**—A perfect system of dry kiln enables us to give you lumber thoroughly dry. Carrying in stock large quantities of different woods permits us to fill your orders with the best selections. Write, sending us a list of the materials you desire. We will quote you attractive prices. Morgan Company, Oshkosh, Wisconsin.

**LUMBER**—Maisey & Dion, 2349 to 2423 South Loomis St., Chicago, Illinois, carry in stock a large and diversified stock of **MANUAL TRAINING LUMBER**. Fifteen years' experience with schools enables us to fill such orders satisfactorily.

### ELEMENTARY HANDWORK

**EVERYTHING FOR ELEMENTARY HANDWORK**—Also for basketry, weaving, bookbinding and chair caning. Mounting boards, Waldcraft dyes, crayons, burlap, scissors, punch and eye sets. Thomas Charles Co., 2249 Calumet Ave., Chicago.

**BASKETRY MATERIALS** for schools and craft workers. Reeds, willow, chaircane raffia, Indian ash splints, braided rush and straw—fine smooth quality—dyes and finishes. Any amount of reeds sold from a half pound up. Also tools and books of instruction. Send for free catalog. "Everything for Basket Making." Louis S. Drake, Inc., 34 Everett St., Allston, Mass.

### TEXT BOOKS

**GRADE WOODWORK**, with Notes and Drawings, by Joseph F. Parks. 30 pages of shop notes and general information. 102 projects with working drawings. Complete outline for grade school woodwork. Third edition just off the press. Single copy 50 cents. Quantities of fifty 35 cents. Make your work easier by adopting it for your school. Wichita High School Press, Wichita, Kansas, U. S. A.

**WOOD PATTERN MAKING** and wood turning are simply treated in the textbook and note-book combined, entitled **Pattern-Making Note-book** by Greene. Illustrated with simple, clear-cut line drawings. Provides additional space for notes and drawings. An effective teaching tool with beginning students. Price, 32 cents. The Manual Arts Press, Peoria, Ill.

### TOYS

**EDUCATIONAL TOYS** by Louis C. Petersen, a new book on toy-making affords ample information as to methods of work, tools, materials, and designs for carrying on this work. The designs are illustrated by photographs of finished toys and full-size pattern drawings to be traced by the child. This book is the result of years of experience in teaching toy-making and the large number of toys shown have been designed and selected with a thorough knowledge of child requirements, possibilities and the conditions under which they are made and used. Cloth bound; price, \$1.80. The Manual Arts Press, Peoria, Ill.

### WANTED

**"WANTED:** Eight F. E. Reed Company's counter-shafts for 10" speed lathes. Address Box X, care of the Manual Training Magazine," Peoria, Illinois.

### POTTERY SUPPLIES

**POTTERY SUPPLIES**—Kilns, Glazes, Clay, Modelling, Wheels, Tools. Plaster Models, Moulds, Stilts, Pyrometric Cones, Modelling Plaster, Metallic Oxides, Chemicals. Lewis Institute, Chicago.

### LETTERING

**BLANK LETTERING PADS** of ruled paper assist wonderfully in the teaching of lettering. These are printed in light blue lines on a good grade of paper. They are convenient and practical helps, making possible a thorough drill in the fundamentals of lettering, and affording a means of noting accurately by student and teacher the development of the ability to letter. In ordering state whether for vertical or slant lettering. In pads of 20 each. Price, per pad, 15 cents. The Manual Arts Press, Peoria, Ill.



# GOOD TOOLS

Are Essential For

## GOOD WORK

Since 1848 we have adhered to one policy.  
To handle only the very best in quality.

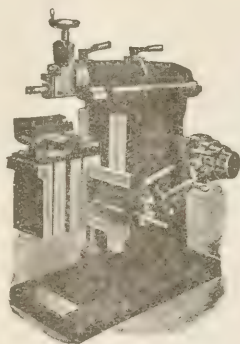
Our new Catalog No. 208 of over 300 pages is of particular value to those interested in VOCATIONAL TRAINING.  
Copy upon request.

## Hammacher Schlemmer & Co.

HARDWARE TOOLS AND SUPPLIES

NEW YORK, Since 1848

4th Ave. and 13th St.



A small Shaper and Milling Machine are absolutely necessary in school work as the work is necessarily small. Small work can best be done on a small

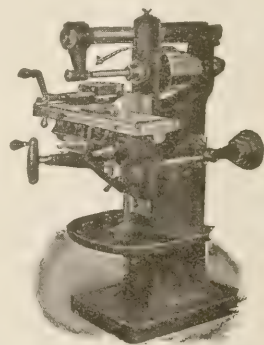
## STEPTOE SHAPER or MILLING MACHINE

They will produce small parts quicker than the larger machines.

They will take up less space.

They will cost less money and you can buy more of them with the same appropriation.

They can be handled easier and quicker by the student than the larger, heavier types of machines, and our seventy-five years of experience with thousands of machines in use giving daily satisfaction are a recommendation for our product that you should not overlook when buying your equipment.



## JOHN STEPTOE CO.

Northside

Cincinnati, O.

## BOOK NOTES

**D**URING the past few months The Manual Arts Press has been making a special effort to provide teachers of manual training with plenty of designs of toys for use just before the holiday season. The effort has been successful beyond expectation. Instead of offering one book and a magazine article we are able to provide the book, *Educational Toys* by Louis C. Petersen, two magazine articles, and *Toy Patterns* by Michael C. Dank, instructor in manual training in Brooklyn, N. Y.

Mr. Dank is an excellent freehand draftsman and has produced designs of special merit from the art standpoint. He is also a teacher who has had experience in teaching toy-making to boys in public schools, private schools and summer camps, and therefore knows just what toys interest boys and just what they can construct satisfactorily. *Toy Patterns* consists of twelve plates 14 by 10½ inches. On these are full-sized drawings, details and sketches for eighteen toys, ranging from a pistol to an aeroplane. These drawings are enclosed in a paper folder, on the outside of which is an appropriate design in three colors. On the inside of the folder are printed a few directions for making the toys which Mr. Dank has found desirable to have accompany the pattern sheets. The interesting character of these toys and their artistic quality can be observed in the photographs reproduced elsewhere in this number.

Concerning *Educational Toys* it should be stated that the author has centered his efforts on making an appeal to the mechanical interests of children and to their sense of humor. Any child who makes the more complex of these toys has gained an experience in mechanical motions that is educationally valuable, and any wide-awake youngster cannot fail to look upon the collection as a jolly company of play friends.

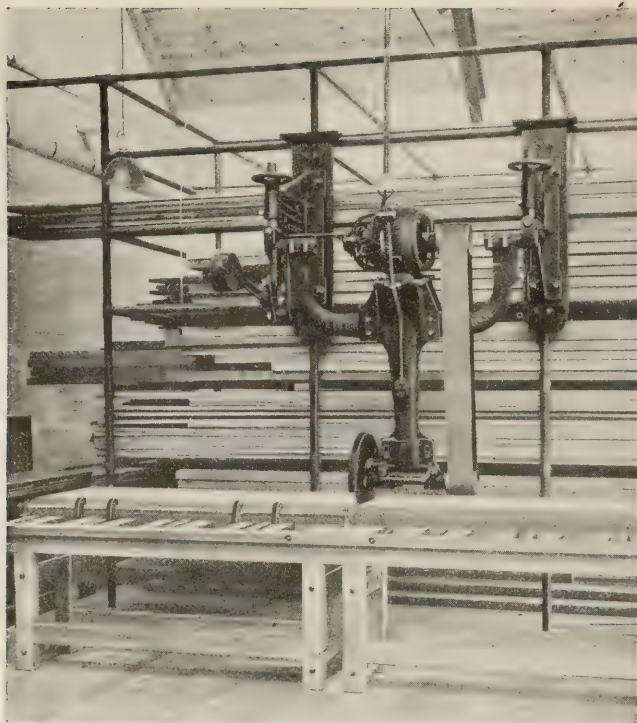
*Educational Toys* is a comprehensive book. In the first part it gives general directions concerning tools and supplies, transferring designs, woods to use, laying out the work, sawing, fastening parts together and coloring. Then follows the full-size working drawings, each accompanied by descriptive matter intended to be helpful in the construction of the toy. Many of these descriptions are reinforced by sketches. The book is enriched by a large number of photographs of the completed toys. While only a few of these toys are new inventions, the selection and comprehensiveness of the volume makes it of special value for school use, whether the drawings are used as working drawings for beginners or as suggestions for advanced students who are designing their own toys.

In a very noticeable way the two publications, *Educational Toys* and *Toy Patterns*, supplement each other. Taken together they become an important contribution to the literature of toy-making.

ANOTHER BOOK on vocational education has just reached us. This is *Introduction to Vocational Education* by David Spence Hill, president of the University of New Mexico. It is published by the Macmillan Company. The book is intended to be used for a textbook as well as for the teacher's library. According to the sub-title, it is "a statement of facts and principles related to the vocational aspects of education below college grade." It regards vocational education as a phase of education in general, and not as something separate from general education. Following so closely after Dr. Snedden's book on *Vocational Education* and treating the subject from a different viewpoint, the book ought to have a wide reading.

TEACHERS OF COSTUME DESIGN have felt the need of some means of helping students to make satisfactory drawings of the human figure. Only in rare cases are students proficient enough in free-hand drawing to produce offhand the types of figures needed. For this reason teachers have resorted to various means of supplying substitutes in the way of drawings from fashion plates and elsewhere for students to copy. This has often consumed more time than seemed desirable and has not been satisfactory otherwise. The best scheme yet proposed is to provide the students with good drawings of the typical figures needed in just the right sizes for practical costume design sketching and then teach the students to trace the figures or such parts of them as are needed in the work. For this purpose neither the completely dressed nor the nude figure is most satisfactory but the one dressed with under-clothing. After several years of experiment and successful teaching of costume design to classes of girls and young women Miss Lydia M. Bolmar, from the New York School of Applied Art, and now a teacher at the National Park Seminary near Washington, has devised *Underlay Figures* for this purpose, which have just been published by The Manual Arts Press. The work consists of six plates 11¼ by 5½ in. in a folder on the inside of which are printed and illustrated directions for the use of the plates. Printed on bristol board, the plates are in the most convenient form for classroom use. They will put new quality and inspiration into many a class in costume design. The price per set is 35 cents.





## Oliver Swing Cut-Off Saw

*Installed in the  
South High School,  
Grand Rapids, Michigan*

The Grand Rapids Schools are pioneers and leaders in many phases of Industrial Education.

In the illustration, note the wall-brackets and saw guards, also the roller table and patent multiple stops. The outfit is conveniently located near the lumber racks.

## Oliver Machinery Company

Grand Rapids, Mich, U. S. A.

New York, Chicago, St. Louis,  
San Francisco, Los Angeles.

## A LETTERING CARD — AND — LETTERING SHEET

**FREE** A card of alphabets showing Gothic capitals and small letters both vertical and slant. Printed on bristol, size, 4" x 8". Arranged by E. S. Maclin.

Lettering sheets. One for vertical and one for slant letters with special ruling on good paper.

Send the coupon today.

The Manual Arts Press, Peoria, Illinois.  
Please send a free copy of "Lettering Card" by Maclin and Lettering Sheets.

Name .....

Position .....

St. & No. ....

City & State. ....

## VENUS PENCILS

17 Black Degrees  
6B softest to 9H hardest  
and  
hard and medium copying  
All perfect



*The largest selling  
Quality pencil in  
the world\**

**FOR** superb effects in lights and shading, for freehand drawing or close detail work, the famous VENUS is unexcelled.

17 black degrees, 2 copying

For bold heavy lines  
6B-5B-4B-3B

For general writing  
and sketching  
2B-B-HB-F-H

For clean fine lines  
2H-3H-4H-5H-6H

For delicate thin lines  
7H-8H-9H

Plain Ends, per doz., \$1.00  
Rubber Ends, per doz., 1.20

*At stationers and stores  
throughout the world.*

**AMERICAN LEAD PENCIL CO.**  
219 Fifth Ave., Dept. A, N.Y.  
also London, Eng.



# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.  
WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City.  
EDITORS FRANK M. LEAVITT Associate Superintendent Public Schools, Pittsburgh, Pa.  
WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON.

Published monthly by The Manual Arts Press, 237 N. Monroe St., Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

---

## CONTENTS

---

INDUSTRIAL EDUCATION IN THE PHILIPPINE ISLANDS.....	Leland Dewitt Baldwin 169
THE EVENING CLASS FOR INDUSTRIAL MEN.....	Charles H. Sampson 171
DR. SNEEDEN'S NEW BOOK—"VOCATIONAL EDUCATION".....	H. H. Stewart 173
FURNITURE FASHIONS OF LONG AGO (Illustrated).....	Frederick J. Bryant 175
PHOTOGRAPHS FROM EVERYWHERE.....	186
Motor Transport School, Camp Holabird, Baltimore.	
EDITORIAL REVIEW FOR THE MONTH.....	187
The 300th Anniversary of America—Skill and Education in Colonial New England— Effect of Continuation Schools upon the Regular Day Schools—Present Day Tendencies in Education—Our California Representative—Art Training and Com- munity Needs.	
A POINT OF VIEW.....	Arthur Dean 192
WASHINGTON CORRESPONDENCE.....	William T. Bawden 194
IN FOREIGN COUNTRIES.....	198
A School of Photo-engraving—Vocational Middle Schools in India.	
PROJECTS, PROBLEMS AND NOTES.....	200
Woodworking Tests—Mechanical Drawing Tests—Rocking Clown—Three-panel Screen—Waste Basket.	
CURRENT PUBLICATIONS.....	208
FIELD NOTES.....	IV
Part-time Work in California—Around New York—Placement Bureau Regulations— New England Items—Minnesota News—The Coming Meeting in Minneapolis— The Atlantic City Meeting—The Western Arts Association.	
PERSONAL ITEMS.....	XXXI
TRADE NOTES.....	XXXII
BOOK NOTES.....	XXXVII

*This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.*

---

Entered at the Post Office at Peoria as Second-Class Matter. Copyright, 1920, The Manual Arts Press.

## FIELD NOTES

### PART-TIME WORK IN CALIFORNIA

THE outstanding educational interest at the present time in California—at least the one which is creating the most discussion—is our Part-time Compulsory Education Act. Ever since the Smith-Hughes Act became operative, part-time education was permissible in this State. But as elsewhere in the country, permission to organize and maintain part-time education, even with the added incentive of state and federal subsidy, failed to give rise to the desired amount of such education. Our State Board of Education, working thru its commissioner of vocational education, Dr. Snyder, felt forced, therefore, to advocate a Compulsory Part-time Education Act. The part-time law was passed at the last session of our legislature and became operative this year.

The part-time law is drawn in the interest of two groups: (a) illiterates and (b) minors. The law was originally designed primarily for persons up to the age of eighteen who, for one reason or another, leave school before completing a high school course. But owing to the prevailing war psychosis, provisions were made in the law also, for training in English for persons between the ages of eighteen and twenty-one who can not meet the sixth grade standard in this subject. As the readers of these columns are not particularly interested in the illiteracy problem, the following explanation will be confined to those divisions of the California Compulsory Part-time Act which bear upon the education of minors.

Considering the part-time act as a whole it is perhaps no exaggeration to say that there is upon the statute books of no other state, a compulsory part-time law of wider possibilities or greater scope. The law provides that a pupil shall be given during his part-time education period, that training which will be most suitable to his needs. For those who are engaged in skilled occupations, who need and desire further instruction in the same, the bill provides that instruction in the occupation shall be given them. For those who need and desire instruction in home economics, a similar provision is made. For persons engaged in unskilled occupations who need prevocational instruction, the bill provides that such instruction shall be given. And it further provides that citizenship instruction and that social and vocational council and guidance must be given.

In California it is not the employer but the pupil and his parents or guardian who decide what subjects of instruction shall be taken. The parents

are responsible for the attendance of the pupil upon part-time education classes; and the employers, by stipulation in the Act, are not permitted to employ a minor under the age of eighteen unless he has on file a copy of the minor's school certificate and permit to work. To insure attendance both parents and employers are subject to fine or imprisonment, or both, if found negligent in the performance of their respective duties relative to part-time education.

By the terms of the Act a minor is normally required to attend school four hours a week during the entire school year. These four weekly hours may be distributed as best suits the possibilities of the school and the needs of the work in which the individual is employed. There is at present in California great diversity among communities with reference to this point of time distribution. Some communities have started out upon the policy of requiring all pupils, wherever possible, to attend a full four-hour session once a week; other communities, on the other hand, have decided to proceed on the policy that, wherever possible, pupils should come to school one hour a day for four days a week; and in some places arrangements have been made for the pupils to attend school forty-five minutes each day for the five school days. In many instances a two-hour period per week has been established for certain minors. Experience is yet to determine which of these policies is best to follow, and under what conditions.

The proponents of the four-hour-in-one-block scheme, state that this arrangement is best owing to the fact that it is easier to provide for the various kinds of instruction which pupils should get; and furthermore, they argue, pupils coming from a distance thus lose practically no time either from school work or from their daily employment by reason of the need of appearing at two different places the same day. On the other hand, the proponents of the several periods during the week, state that there is, where this scheme can conveniently be carried out, less likelihood of absences on the part of pupils, and it permits of better continuity of work.

The setting-up and maintaining of part-time classes is assigned to the high school principal of each district in which there are a sufficient number of pupils to justify part-time work. The principal of each such district high school is required by the act to issue to every sixteen-to-eighteen-year-old in the community a school certificate and permit to work which must state on its face the time when the pupil is required to be in school and when he may work. Such a certificate must be issued, not only



# WHY TAKE A CHANCE

The Chase Metal Works, Waterbury, Conn., needed additional band sawing capacity during the war. They couldn't take any chances.

They bought the Oliver Band

Saw illustrated and like the other "Oliver" Tools in their Pattern Shop it made good.



**OLIVER**  
**MACHINERY CO.**  
Grand Rapids, Mich.  
U. S. A.





## FIELD NOTES—(Continued)

to minors who are out of school, but also to those who are in school. The latter class must be certificated in order that a pupil of proper age may be employed after school hours, if employment is desired, with assurance to the employer that the law is not violated. The law specifies that the document shall clearly show that the sum total of work and schooling for any one day does not exceed eight hours per day.

The Act stipulates that part-time education shall be given between the hours of 8:00 A. M., and 5:00 P. M., and it is intended that this shall be during the regular hours of employment. However the act provides that should a certain number of individuals in the district find it impossible to be released from work for the required four hours of schooling during the regular hours of employment, the local school board may set up classes for their instruction on Saturday afternoon. This conditional provision seems to be causing more trouble in California than any other phase of the act. It was clearly the intention of the proponents of the act that the privilege of giving Saturday afternoon instruction would be made use of only in certain exceptional cases where the industry would materially suffer were minors released during the regular hours of employment. But it is regrettable to note that more employers than conditions warrant are taking advantage of the Saturday afternoon provision. Although our part-time act, in so far as it pertains to minors, has been in operation but a few weeks, experience is already demonstrating that to compel employed youths to take their part-time education during what normally would be their free time is unprofitable. In most instances the youths openly resent being forced to remain after working hours while their older associates are away free to enjoy themselves.

C. L. JACOBS.

### AROUND NEW YORK

A HOME study course in textiles is offered by the extension department of Columbia University to meet the needs of buyers, salesmen, etc., of the wholesale and retail dry goods who find they lack a knowledge of selling points of textiles. The manufacture of textiles, the raw materials, yarn manufacture, weaving, dyeing, and finishing of fabrics, a change to any or all of which makes a difference in the fabric, will be studied.

The course provides such instruction in the form of lesson sheets, with samples of fabrics, etc. Questions may be asked of the instructor. The course is planned to furnish students with sufficient knowledge to describe, identify and test all kinds of

textiles and thereby have a grasp of the selling qualities of a fabric.

CLASSES for the training of teachers for industrial schools began work during the last week of October. To meet the demands for competent teachers the state has organized teacher-training courses for the preparation at night of properly qualified men and women drawn from the trades and from the industrial occupations. Further information concerning these classes may be obtained from James H. Allen, director, Flatbush Extension and Johnston St., Brooklyn, N. Y.

YOUNG WORKERS must obey the new education school laws. Magistrates are cooperating with the Board of Education in requiring attendance. A number of cases were brought before the Municipal Term Court, Magistrate Charles N. Harris, presiding. Action in a majority of the cases was deferred to give the child a chance to comply with the law. Nearly all of the parents, who were summoned, professed ignorance of the provisions and penalties of the law and were inclined to think that the time the children spent in school would be deducted from their pay.

Magistrate Harris made it clear that such was not the case. "The law", he declared, "imposes an obligation upon the parents to see that the child goes to school. It imposes an obligation upon the child equally, and if the child refuses to go to school, the child can be fined and will be fined exactly the same as any other case.

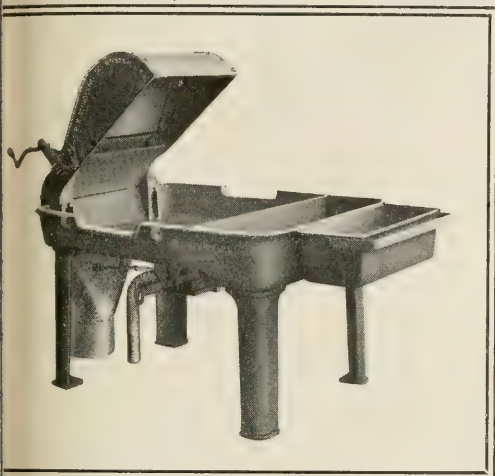
"If a child who was over sixteen years of age went into a shop and took anything, it then would be arraigned in a magistrate's court, and could be fined, placed on probation, or held for special sessions. The same rule applies to this law as to any other law. If you were under sixteen years of age you could not be fined in this court, you would have to be sent to the Children's Court; but if over sixteen, you can be fined for wilful disobedience to law just as well as your mother.

"The law is going to be enforced as long as it remains on the statute books of this state. The law is one which is endeavoring to assist children in vocations after they leave school until they become eighteen years of age, unless they have graduated from a high school. They are to attend only four hours a week. All the employers that the Board of Education has met with so far have been perfectly willing to aid them in allowing the child to be absent for those four hours. The schools give them part vocational training and part academic training, and it is very good, and a great assistance to the child, especially the vocational part. The employer is perfectly willing in every case, so there is no reason





# FORGES



Sturtevant  
Forges have been  
designed and built  
to meet the  
requirements of  
the school shop

es adapted for all light work and are of par-  
a size and design to fit your special require-  
ce gained thru sixty years of leadership.

Supply Fans, Exhaust Fans, Ducts and Flues

WILL HELP YOU TO PLAN

# ANT COMPANY

etts, and all Principal Cities





## FIELD NOTES—(Continued)

why the child should not attend those four hours a week. The law is going to be enforced, whether against girls or against boys; and if they don't go to school they will have to meet the punishment provided in the law."

DR. GUSTAVE STRAUBENMULLER, associate superintendent of schools, in charge of vocational activities and vocational education, has just completed forty years of service in the department of education of the city of New York. The occasion marked the first time in its history that the Board of Superintendents received a motion, both moved and seconded, by eight of its members" that there be entered in the minutes of the Board of Superintendents this record of the congratulations of the associates of Gustave Straubenmuller that the schools of New York have had his service and counsel for forty years. We wish for the schools and for him a long and happy continuance of this relation." Dr. Straubenmuller has been and is today a great believer in all forms of manual and vocational education.

FOREMEN and other executives of industrial plants will be able to take courses of instruction in factory management and efficiency if plans started by the Manufacturers' Council of the Brooklyn Chamber of Commerce are worked out as proposed. The idea is to have such courses established at one of the local educational institutions. The manufacturers received the plan with approval and a committee was appointed to confer with the authorities of the various local colleges and institutes with a view to establishing such a course. Several of the larger Brooklyn industries attempted to form classes for foremen, but have not met with much success, on account of limited facilities. It was agreed that if Polytechnic Institute, Pratt Institute, Adelphi College, or some other institution of like standing, would establish such a course, hundreds of men connected with the big Brooklyn factories would take advantage of the opportunity. The course of instruction should teach men not only how things are done, but how and why they are done.

DR. JAMES P. HANEY, director of art in high schools, in a report just made on the teaching of art in high schools, outlines the advances made by the department during the year, and the steps taken to forward organization and teaching, and to enlist the services of outside agencies in the work of the schools. Foremost among the advances was the new examination scheme, developed in January, 1919, in connection with regents' tests, which resulted in the raising of technical standards in representative drawing throughout the city. Another

encouraging movement was in the direction of art scholarships. More schools interested themselves in providing funds for the industrial art education of talented graduates. Cooperative relations with the trade were strengthened in various directions, and additional opportunities were offered to graduates with industrial art training to pass directly into positions in trade studios. Twenty-one of the twenty-five high schools according to Dr. Haney are now offering advanced work in some form. A class on Saturdays for especially talented pupils has been formed. Dr. Haney gave great credit for the general advance in the department to the excellent work of the corps of high school art teachers.

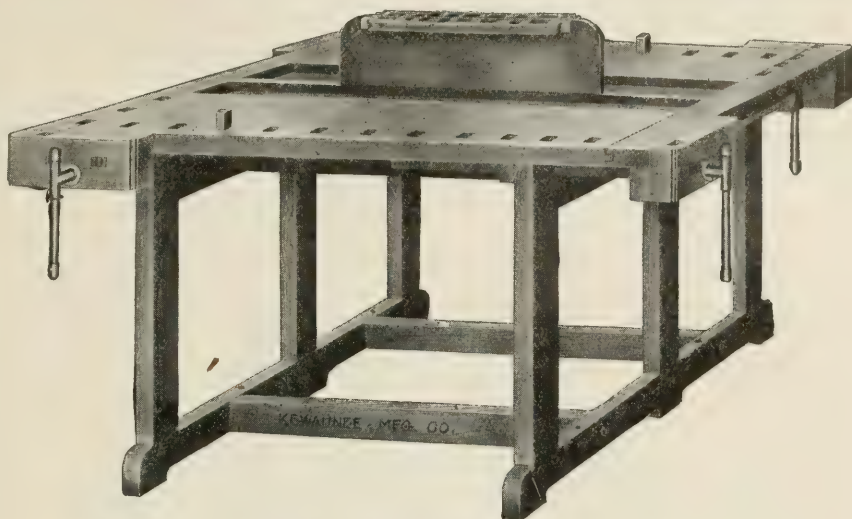
### PLACEMENT BUREAU REGULATIONS

THE BOARD OF EDUCATION thru its Placement Bureau has secured positions for a number of high and training school pupils, who find it necessary to obtain employment if they are to remain in school. The work, which is under the general direction of Charles M. Smith, coordinator, supplements and strengthens the placement work in individual high schools by effecting the closest possible cooperation.

In a notice to principals Co-ordinator Smith suggests that before sending a pupil to his office to apply for a position requiring a special physical strain, such as store work, etc. that the physical training teacher of the school be requested to examine the applicant to ascertain any physical defects, such as fallen arches and the like, which might make such employment by the pupils inadvisable.

The daily and weekly rate of pay agreed upon with these larger concerns should form a basis in determining the fair rate for all work of this nature. The placement teacher should see, as far as possible, that pupils who may be employed for part-time service, receive pay under working conditions in conformity with these standards.

Every effort should be made to know the pupils in each school who are employed outside of school hours, whether placed thru the efforts of this office, the school, or secured independently. In each case the scholarship should be examined to see if the employment is affecting it unfavorably, and if such is the case, it should be learned whether employment is absolutely necessary. If it is, a lightening of the program should be suggested, even if graduation should be delayed a term or more. If the employment is not absolutely necessary, pressure should be brought to bear upon the pupil either to improve his scholarship or discontinue employment.



MANUAL TRAINING BENCH NO. 1907

This is a double bench, with head and tail vises, securely bolted together. The tool rack is elevated in the center. The whole top is one piece. This bench can be supplied with drawer sections if desired.

## “Without Qualification”

To praise a manufactured product “without qualification” implies that it occupies a unique and unusual position in its field.

We have always claimed for Kewaunee this position in the field of School Laboratory Furniture, and it is refreshing to have our opinion endorsed so completely.

A well known California Principal wrote as follows:

“Without qualification I would pronounce your products the finest human genius and skill have yet produced. I heartily appreciate your effort to coordinate your labors with ours in the school room, in an endeavor to raise the standards of cleanliness, economy of time, and efficiency among our young people. It would be difficult for me to suggest a real improvement upon your laboratory furniture.”

*Address all inquiries to the factory at Kewaunee.*

New York Office:

**Kewaunee Mfg. Co.**  
LABORATORY FURNITURE EXPERTS  
111 LINCOLN ST.

70 Fifth Avenue

**KEWAUNEE, WIS.**

BRANCH OFFICES:

CHICAGO  
COLUMBUS

ATLANTA  
ALEXANDRIA, LA.  
LITTLE ROCK

DALLAS  
EL PASO

KANSAS CITY  
MINNEAPOLIS  
DENVER

SPOKANE  
SAN FRANCISCO



## FIELD NOTES—(Continued)

Where it is found that a pupil must be largely self-supporting in order to remain in high school, and it is the intention of the parent or guardian to allow the pupil to go direct from high school into industry, the pupil should be encouraged to enter the Co-operative High School, that being the school best suited for his needs.

In the case of pupils employed in department stores on Saturdays, or afternoon and Saturdays, and during vacation periods, who are placed thru this office, the same arrangement will be made this year as was made last year; namely, that contingent upon satisfactory scholarship they shall be excused from school for the seven days immediately preceding Christmas, i. e., Dec. 16 to 24, inclusive. Satisfactory scholarship is understood to be that the pupil is maintaining an average for all subjects of approximately 70 with no failures in any subjects. This excusing of such pupils is to be considered official, and is not in any way to debar the pupil from examinations or other school privileges, etc. This scholarship is to be checked up to Dec. 1, at which date pupils who have not met these eligibility requirements will be discharged by their employers. All others will be expected to fulfill the agreement to work full time for the period of Dec. 16 to 24 inclusive. Lists of pupils placed by this office will be sent to the schools prior to Dec. 1 for report on scholarship.

—W. H. DOOLEY

### NEW ENGLAND ITEMS

**W**ALLACE HACKETT, formerly director of the New England Vocational School at Rutland, Mass., has resigned his position there to re-enter the United States Army, he having been recently commissioned as 1st. Lieutenant of Infantry. Mr. Hackett donned the kahki again and reported at Camp Devens about October 16th. Thus far no successor to Mr. Hackett has been appointed, tho it is expected that a new director will soon report for duty.

This school was established by the Rutland Private Sanatorium Association and maintains an excellent type of varied rehabilitation training for ex-service men of the Army and Navy who were gassed and who have tubercular tendencies. The faculty is composed of ex-service men and women, and every possible effort is made to provide the most efficient type of training and education for the men, and no efforts are spared to make them as comfortable and happy as may be possible. Rutland is peculiarly adapted to the physical needs of these men because of its splendid climate and beau-

tiful location, and is practically the highest incorporated town in the state of Massachusetts.

Thus far the board of directors has provided auto mechanics work, rug weaving, watch repairing, agricultural work, commercial and academic courses, woodworking, etc., and other activities will be introduced as conditions warrant.

Ernest W. Beck, formerly director of Industrial Arts in Nashua, N. H., and who during the war, was associated with the efficiency service of the Groton Iron Works on shipbuilding problems, is now associated with the United States Rubber Company at their New York office.

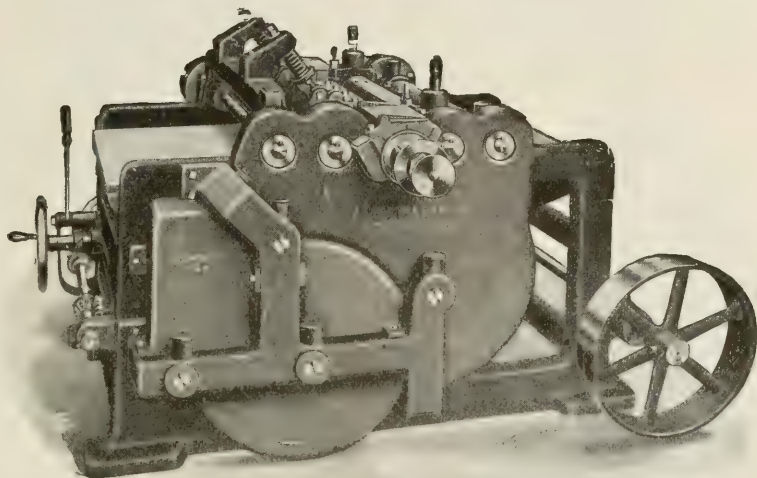
Mr. Beck is in charge of the Industrial Relations Department of the Tire Division, and his duties, connected as they are quite intimately with the personnel work of this big enterprise, require that he visit the various plants of the company in order to carry out the policies of the company. The company is fortunate in securing the services of such an energetic man as Mr. Beck has always proved himself to be. He can bring to bear on his new duties a fund of worth-while experience and training which has demonstrated its value in the past in Mr. Beck's activities.

Owen D. Evans has resigned as principal of the Boston Continuation School to accept a position of state-wide relations and importance in Pennsylvania, and is already actively engaged in the duties of his new position. Boston has lost and Pennsylvania has gained the services of a splendid organizer a tireless worker, a keen student of educational and industrial requirements and conditions, and one who is largely responsible for many of the best ideas of continuation school work in general. Mr. Evans not only possesses the courage of his convictions but has a very interesting and convincing manner of presenting his ideas, and he is responsible for a considerable part of Massachusetts' progress in continuation school work, either thru his influence or thru active participation. He has also been prominent in the teacher training activities of the Massachusetts Board of Education.

Massachusetts is making rapid progress in the establishment of continuation schools in accordance with recent legislation, and this work bids fair to share with cooperative or part-time work the major part of the honors available for any of the various phases of vocational education. In many localities it has been difficult to secure directors and instructors with proper qualifications, and it is also difficult to provide necessary buildings and equipment on short notice. Many cities are therefore using old school buildings, temporarily in disuse, or sharing the regular building with the other schools, together



Practical Work in Manual Training can be  
Taught More Successfully on a  
**No. 156 "Lightning" Cabinet  
Smoothing Planer**



IN ORDER TO TRAIN THE STUDENT TO BECOME AN  
EXPERT IN THE WOODWORKING INDUSTRY, HE MUST  
BE TAUGHT ON MACHINES THAT ARE PRACTICABLE FOR  
THE SCHOOL ROOM AS WELL AS FACTORY.

NO. 156 IS NOW IN USE IN HUNDREDS OF MANUAL  
TRAINING SCHOOLS AND TECHNICAL COLLEGES. SIM-  
PLE AND EASY TO OPERATE.

*Send for Special Bulletin A-3.  
For further details about this wonderful machine.*

**J. A. FAY & EGAN COMPANY**

ESTABLISHED 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery

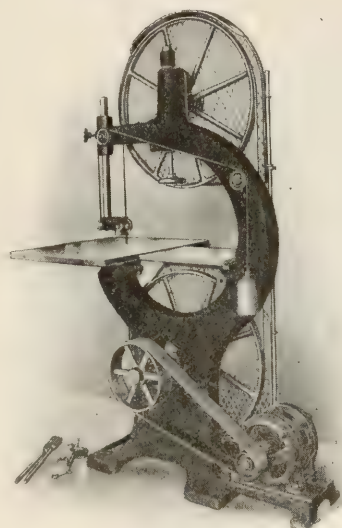
730-750 W. FRONT ST.

CINCINNATI, OHIO

# EQUIP WITH



## Woodworking Machinery



**FAMOUS**  
36 Inch Wheel Band Saw

**A** STANDARD machine for commercial shop and one of our many machines especially suited to manual training needs. Motor driven, well guarded, accurate, and durable.

Fourteen thousand of these splendid band saws now in use.

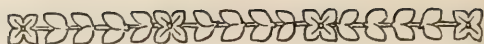
---

**Put your problems up to  
Our Engineering Division**

---

*Ask for Catalog No. 20*

**THE SIDNEY TOOL CO.**  
Sidney, Ohio



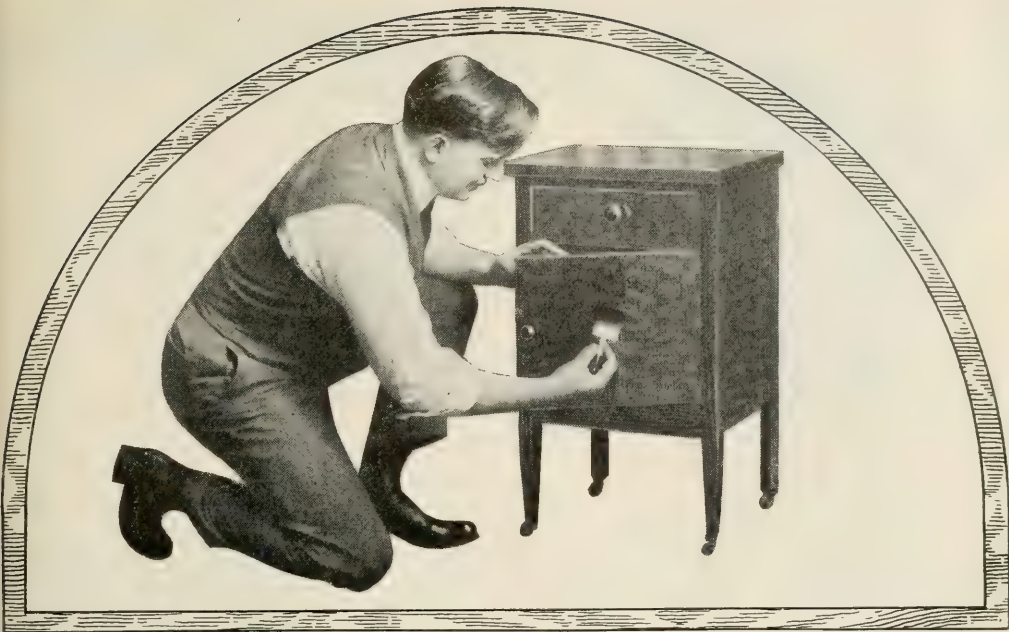
### FIELD NOTES—(Continued)

with such equipment as may be needed for academic or vocational work.

Among the appointments recently made around Boston for continuation school service may be mentioned the following: In Cambridge, Mr. Dugan, director of continuation schools; Mr. Joseph Goulart, director of boys' division; Mr. Mac Rae, instructor in shopwork. In Brockton, Kenrick M. Baker, director of continuation schools, Vincent S. Harriman, instructor in machine shop work; Nahum E. Harden, instructor in carpentry; Richmond Barton, instructor in academic subjects, Chester Swanson, instructor in commercial work. In Somerville, Everett W. Ireland, director of continuation schools; Lawrence E. Landahl, Instructor in practical arts for boys; Kells S. Boland, instructor in academic work for boys; Miss Estelle Crow, instructor in practical arts and academic work for girls. In Everett, Wilbur E. Parker, director of continuation schools; Adelbert P. Spicer, instructor in vocational subjects. Mr. Parker and Mr. Spicer are graduates of the technical department of the Everett High School and have served overseas during the war for a long period. In Lynn, Ralph W. Babb, director of continuation schools.

This type of work is gradually taking shape all over the state and will soon resolve itself into one of the most important educational problems with which the State Board of Education will have to contend. One of the most interesting and fruitful summer educational conferences ever held by the Mass. Board of Education was held at Hyannis, Mass., during the past summer, and its chief problem for consideration and study was continuation school work in its various phases. Over one hundred directors and instructors were in constant attendance. A more complete report of this conference may appear in a later issue.

The Massachusetts Board of Education has established another group of the usual teacher training classes which are now opening for the customary term of twenty-five weeks, two nights' instruction being provided for each week. One of these classes is held in the Normal Art School, under the direction of Maurice J. Moriarty, coordinator in the co-operative classes of the Charlestown, Mass., High School. Another class meets in the Boston Trade School and is in charge of Francis L. Bain, assistant director of the Department of Manual Arts, Boston School Committee. The candidates this year appear to be more than usually promising as judged by qualifications, and a program of progressive interest and accomplishment is anticipated.



## Finish It Well

THE finishing of manual training models is assuming more and more importance every year. Surely it is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

### JOHNSON'S ARTISTIC WOOD FINISHES

Johnson's Artistic Wood Finishes are now being used in nine-tenths of the schools in the Country. They are particularly adapted for manual training work as they may be applied by the youngest and most inexperienced pupils with the best results.

The Johnson Wood Finishes most popular among Manual Training Instructors and Pupils are *Johnson's Wood Dye*, *Prepared Wax*, *Under-Lac*, *Paste Wood Filler*, *Flat Varnish*, *PerfectTone Under-Coat* and *PerfectTone Enamel*. We have a very attractive exhibit of wood panels finished with these products which we are glad to send Manual Training Instructors who will give it wall space in their shop. Write for it.

#### **Beautiful Instruction Book Free**

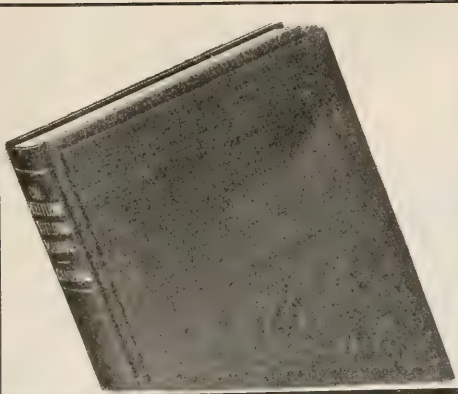
Our beautiful new thirty-two page colored booklet "The Proper Treatment for Floors, Woodwork and Furniture" is just off the press. It is full of valuable information for Manual Training Instructors and Pupils. Do not hesitate to write for it. We will gladly furnish it free upon request.

**S. C. JOHNSON & SON, Racine, Wis.**

"The Wood Finishing Authorities"  
Canadian Factory—Brantford







**A. WILEY**  
**Engineering Series Book**

# Oxy-Acetylene Welding Manual

BY LORN CAMPBELL, JR.

Formerly Lieut. U. S. A., in charge of  
Welding Instruction, Ordnance Depart-  
ment, U. S. Army.

A practical text on oxy-acetylene  
welding and cutting of Cast Iron,  
Steel, Brass, Aluminum, and Malle-  
able Iron. Apparatus and its opera-  
tion and repair, shop equipment, and  
preheating agencies are taken up in a  
clear and simple manner.

For classroom use and as a refer-  
ence in actual shop practice, this book  
is unsurpassed.

154 pages, 5¼ by 8—Illus.—

\$1.50 postpaid.

*Test it for 10 days—FREE.*

John Wiley & Sons, Inc., 432 Fourth Ave.,  
N. Y. City.

You may send me the following on 10 days'  
approval:

**Oxy-Acetylene Welding Manual**  
By Lorn Campbell, Jr.

I agree to pay for the book or return it  
within 10 days of receipt.

Also please send me a copy of your Voca-  
tional News and put my name on your mail-  
ing list.

Name.....

School.....

Official Position.....

Address.....

MTM 12-20



## FIELD NOTES—(Continued)

It will be of interest to the large number of per-  
sons who have known of the splendid work done by  
the Sloyd Training School in Boston for so many  
years to learn that this school is now being financed  
and supported entirely by the students and the  
alumni. The former board of directors of the school  
decided to discontinue the work some time ago, but  
generously agreed to allow the alumni to have the  
use of the building and equipment free of cost, pro-  
vided all running expenses would be assumed by the  
alumni. The latter are making enthusiastic efforts  
to carry on the work for which this school has so  
long been noted and the present outlook is rather  
encouraging.

Josef Sandberg is in charge of the school and its  
activities, and in every way is a most worthy suc-  
cessor of Gustaf Larsson, who was such an ardent  
exponent of sloyd work and its possibilities. Mr.  
Sandberg is an educator of broad outlook and is  
finely equipped to realize the best possibilities of  
the work in which he is engaged. The City of Boston  
has for many years drawn on this school for both  
teachers and substitutes.

The Boston Manual Training Club held its first  
Fall meeting at Healey's Hotel, Boston, on Saturday  
October 9, 1920, at 12:15 o'clock. The sixty or more  
members present enjoyed a very substantial lunch-  
eon, after which several new members were voted  
on and admitted to the privileges of the Club.  
President George C. Greener, reporting for a com-  
mittee, stated that at the next business meeting of  
the Club a proposal would be submitted calling  
for a change of name of the organization. It is felt  
that with the great variety of types of vocational  
work and the large territory from which the Club  
members are drawn, the designation "Boston Man-  
ual Training Club" represents both the members  
and their work very inadequately, and a title or  
name suggesting a wider scope will be adopted.

After matters of business had been disposed of  
the president introduced Robert O. Small, Deputy  
Commissioner of Education for Massachusetts,  
who gave a very interesting talk concerning con-  
tinuation schools. He pictured the present situa-  
tion with reference to continuation school work and  
then summarized the problem as follows:

"The work of these continuation schools should  
not be planned as a continuation of established  
elementary or secondary school courses. These  
schools are useless unless they attempt as most  
important certain aims which have been chiefly and  
properly subordinated in the regular schools.

"This is not a criticism of those schools. It is a

## If You are an Apprentice—

You take your problems to the STARRETT BOOK FOR MACHINISTS' APPRENTICES. It helps you to solve them.

But, if you've completed your time and are a MACHINIST—the old problems no longer puzzle you, but there are new ones that DO.

They're answered in Volume II of this series, THE STARRETT DATA BOOK FOR MACHINISTS.

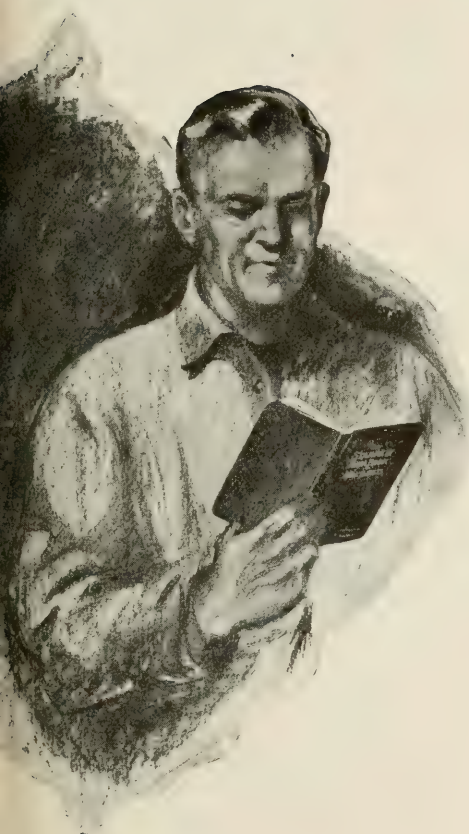
Four editors, each an expert in his field, have selected its tables and formulas. Gear-cutting feeds, power transmission data, strength of materials, etc.—you'll find these and many more in its 180 pages.

Bound in red Athol leather. Size  $4\frac{1}{2}$  x 7. Price 75c. Get either of them at your dealers, or order directly from us.

Catalog No. 22'EF' is a handy reference book. Sent free upon request.

THE L. S. STARRETT CO.

*The World's Greatest Toolmakers  
Mfrs. of Hack Saws Unexcelled  
ATHOL, MASS.*



42-110

# Use Starrett Tools



# SHOP APRONS

*Guaranteed*

Adjustable  
Neck  
Strap



Saves  
Many  
Times  
Their Cost

**The Apron You Can Buy  
with Confidence**

Standard  
Equipment  
In the  
Best Schools  
Everywhere

Instructors Apron free with first order  
for one dozen.

Price, White 75c

Price, Brown 80c

Delivery Same Day

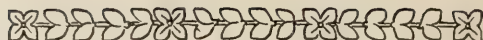
Send no money—Just your order to

**CANVAS PRODUCTS  
CORPORATION**

19-21-23-E. McWilliams St.

School Dept.

FOND DU LAC, WISCONSIN



## FIELD NOTES—(Continued)

statement of the differing functions of the two types of schools.

"1. These schools should help the minors to determine what there is in their immediate employment and to get the most out of it.

"2. These schools should help the minors to make more intelligent choice of occupations and as far as possible train them for advantageous placement in these occupations.

"Culture and character the regular school has developed very much, but let us not forget that character and culture had their origin in the exercise of very humble pursuits. Let us not forget that before they are possessed to any degree there must be a constant exercise and pursuit of these qualities in the daily walks of life. In the daily affairs of life there is the largest opportunity for their acquirement, and let us set ourselves to the task of discovering how, in a new industrial age and in a changed condition of living, a trade may be learned, an industrial vocation taught, and character and culture developed.

"3. These schools should establish cooperative relations between the school, the homes of these pupils and the industries in which the pupils are employed. All of their activities should be used to help explain and interpret to the pupils the interplay of knowledge and life."

—FRANCIS L. BAIN.

## MINNESOTA NEWS

THE fifty-seventh annual meeting of the Minnesota Education Association met in St. Paul, November 3 to 6. Over 7,000 teachers and administrators of the state were in attendance. One feature, which was of quite general interest, was the address, "What is Education?," by Sir Auckland Geddes, British Ambassador to the United States, himself an educator.

The main themes running thru the sectional meetings for manual training and vocational education were compulsory part-time education and evening schools. The completion of the proposed group of education bills by the State Department of Education for presentation to the legislature was largely responsible for the heightened interest in these phases of education.

For the general section of industrial and household arts the following were elected officers for the coming year. Homer J. Smith, College of Education, University of Minnesota, president; Miss Marie C. Henneger, Lyndale School, Minneapolis, vice-president; L. F. Knowles, director manual training, Mantorville, secretary.



# Manual Training Magazine

DECEMBER, 1920

## INDUSTRIAL EDUCATION IN THE PHILIPPINE ISLANDS

LELAND DEWITT BALDWIN

WHEN the American first came to the Philippines they found education in a truly deplorable condition. Illiteracy was the general rule and a sodden, apathetic attitude toward life was universal. Now all this is changed. Without education being compulsory, the schools are filled with over half a million pupils, and there has been a general awakening on all lines.

The head of Philippine education is the Secretary of Public Instruction, a member of the Philippine Commission who also has various other activities under his control. Under him is the Director of Education, chief of the Bureau of Education. He has two assistant-directors to help him in important details. The Islands are parcelled into thirty-eight divisions, and at the head of each of these is a division superintendent. Each school division is further divided into supervising districts, the principals and teachers of which are accountable to the supervisor of the district.

The system is mobile and efficient. Innovations can be introduced in a short time, and changes in personnel are easily effected. Bureaucracy is avoided by the system being under the watchful eyes of the Governor-General and the Secretary of Public Instruction, who are quick to notice and remedy any defects or inefficiencies. In an undeveloped country like the Philippines, centralization is practically the only method of controlling education and thus far it has proved immensely beneficial.

The Philippine Islands are mainly agricultural, so the government in its industrial training has centred mostly upon agriculture and kindred pursuits. In no way has the school system of the United States or any other country been transplanted to the Philippines. It is a development of its own necessities.

The Philipinos have needed little to support them under usual conditions. What their farms did not produce was purchased with money earned in household industry. The Philippine Islands are now in the household-handicraft stage of industry and bid fair to remain there for some time. However they are awakening to new needs. Their houses, formerly bare shacks, are being supplanted by frame dwellings; their spare furniture is being replaced by more modern conveniences. To obtain these, it is necessary that they work, and it is to enable them to undertake intelligently and efficiently these new burdens that the government has established its industrial schools.

Industrial training begins in the first year of school and continues thruout the entire school course. In fact, academic learning occupies a comparatively small place in the curriculum. There are several reasons for this. The average Philippino first grader is two or three years older than the American, and Philippine children are much defter with their fingers than Americans. Then by far the greater part (95% of the total enrollment) are able to take only four

years of schooling comprised in the primary division, so that it is necessary to get in the industrial training as soon as possible.

The program for the first year includes reading, language, numbers, and writing, with drawing, coloring, braiding, paper cutting, etc., approximating the work of the kindergarten in the United States. In addition they must also take a course in weaving and making small articles, as fans and trays, or learn the rudiments of gardening, special attention being given to the care and beautification of the school grounds.

The second year continues the academic studies of the first with more advanced phases of the industrial work. Woodworking, carving, and clay modeling are added for the boys, and lace making for the girls.

The third year the academic course is enlarged to include geography and the pupil is required to be able to make some articles suitable for sale. The lines of these courses are divided into hand weaving, basketry, gardening, wood-working, bamboo and rattan work, loom weaving, pottery making, sewing and lace work.

The fourth year is more advanced work of the same type with the addition of household arts, cooking and embroidery for the girls. As we have said, the major part of the pupils go no farther than this, but when they leave the fourth year the girls should be fitted for home duties and the boys for gardening with a fair knowledge of carpentering and such useful work. The household industries of the Philippines comprise mostly weaving, carving, and lace making, so the primary graduate with his leavening of learning is able to pursue better the duties of life.

Those students who continue beyond the primary schools enter immediately

into specialized courses. These schools cover three years and are comprised in six courses.

*First*, the academic or general course which fits mostly for high school. The handicraft element is not emphasized in this, consequently the government, for the good of the pupils, endeavors to turn them, particularly the girls, to the more practical courses.

*Second*, the trade course. This offers instruction in carpentering, furniture making, blacksmithing, wheelwrighting, etc. Less than half the time is spent in the classroom. Shops, specially equipped for this work, are being increased, and the course is becoming very popular. The pupils are encouraged to undertake work that is saleable. The principal helps them to make contracts with merchants or others and assists them in the business and constructive details. A pupil leaves this course fully prepared to take up his life work in his chosen industry.

*Third*, farming. The greatest difficulty here has been to secure teachers fitted for the work, but they are gradually being obtained and the advanced agricultural courses strengthened. The primitive agricultural methods of the Philippines are in great need of reform, and these schools are performing a great work. Nine farming schools are operated by the Bureau of Education.

*Fourth*, housekeeping and household arts. In this course the girls are taught the duties of a Philippine household, plain cooking of Philippine foodstuffs, and, above all, sanitation.

*Fifth*, course for teachers. The corps of Philippine teachers rank slightly higher than the seventh grade in education. It is the purpose of this division to fit certain students for efficient service in teaching.

*Sixth*, course for business. By this course the natives are fitted for clerkships and minor accounting positions. There is a great demand for them all over the island.

Every year about 200 young men and women are brought to Manila from all over the Archipelago and given one or two years of special industrial training, after which they return to their homes to help upbuild education and industry. The School of Arts and Trades is the principal school in this work. A force of twelve inspectors and supervisors travel from one school to another advising and helping where they are needed. Their work is supplemented by provincial supervisors.

The teachers and pupils are kept informed of latest developements by means of pamphlets, circulars, and a government trade magazine, *The Philippine Crafts-*

*man*. Every year there are gathered for exhibition in Manila articles from schools all over the Islands.

Educational work is also being developed by numerous Archipelago and provincial teacher's institutes where the instructors are brought together for instruction in method—much as in this country.

The place of the industrial schools in the Philippines is very important. New industries are being introduced and native ones strengthened by them. Their activities are widely varied. For instance, they are endeavoring to partly replace rice with corn and are training efficient nurses. There is no doubt that the moral, mental, physical, and industrial standards of the Philippines are being raised by the United States' efforts in these fields thru this complete system of industrial schools.

## THE EVENING CLASS FOR INDUSTRIAL MEN

CHARLES H. SAMPSON

Huntington School, Boston

IT IS hard to study in the evening if one is not interested in evening study. It is not particularly difficult to attend a night class if one is ambitious and likes what he is doing, and if certain other conditions are ideal. Much depends upon these other conditions. What are they? I say these conditions should be ideal. Perhaps that is expecting too much but they should approach an ideal.

Why are so many evening classes a failure when they should be a tremendous success? The troubles seem to me to depend upon such definite things that classes can be stated without any thought of guessing about them. I am inclined to believe that under usual conditions practically all evening classes can be made successes.

Let us first consider the classroom. It should be well lighted. The indirect system of lighting should be used. Men cannot sit under a glare and enjoy it. There should be good ventilation. The class members are tired after the day of labor. Poor ventilation produces drowsiness. Drowsiness produces a spirit of "I am losing interest." The sleepy chap will eventually drop out. It is not his fault entirely.

There should be a good blackboard, chairs with arms for writing, ample equipment for demonstrating the truths of the subjects being taught. The room should be kept clean and neat. There should be a place for hanging coats and hats.

The text is an important factor in any course. It should be selected with great



care and with the needs of the men uppermost in mind. If the subject is applied mathematics, any text will not do. If the members of the class are electricians a book containing electrical problems should be used; if the class is composed of machinists, the problems of interest and value to them in their work should be discussed. Fundamental principles do not change. A "live" teacher can apply them to problems of interest to his students if he will.

Before any class is permanently formed a study of the men who are to compose it should be made. Too many classes are built up on the "hit-or-miss" method. It seems to be too much a question of quantity rather than uniform quality. Isn't it true that most men are inclined to wrongly state facts regarding previous educational experience? Not intentionally but because one does not realize how "rusty" the years out of school have made one's mental machinery. Nearly all men will assume that because they have once upon a time pursued a course in arithmetic, they know arithmetic. It may have been twenty years ago that A sat in a class in arithmetic; B may have been there only a year since. Should these two men be placed in the same evening class? My experience tells me that the older man needs very patient and very gradual treatment. His pace must be slow at first, if he is to maintain his interest. Careful class selection is important.

The important cog in the machine is the instructor. Upon him falls the greater part of the responsibility for the success of the men with whom, not for whom, he works. He must be a man with a cheerful disposition and with a keen understanding of human nature. He must have personality. The members of his class must like him if success is to result.

This teacher must know his subject. He can't "put anything over" on his pupils for long without bad results. A "bluffer" won't last long. Or at least, his class won't. The teacher should be a man who has actually worked as a tradesman. He can then get the right viewpoint. He must always be on a level with the members of his class. To create an impression that he is any better than they are is fatal.

To mention the word discipline in an evening class of men is to show exceedingly poor judgment. To talk to men as one would talk to a class of young high school boys shows lack of ability to "size up" the situation. These men don't need discipline. They need encouragement and help.

Lesson assignments should be made with much thought. They must not be long. Problems should be selected which will best illustrate the essentials. The problems assigned yesterday should be fully explained before going on with the advanced work for to-morrow. There should be no doubts and misunderstandings left behind.

The closing session should be more than a lesson. In fact, it is better to close all work before this last meeting. Let there be refreshments, "smokes," granting of certificates by an official of the company, a dance perhaps. Let there be an informal discussion of the work covered during the past, and let there be some plans made for the future.

I consider this final gathering most important. Human traits should be catered to in the evening industrial class. To close a session in a joyful manner paves the way for good work next term or next year.

Why not make all evening industrial classes a recreation and not a drudgery?

## DR. SNEDDEN'S NEW BOOK—"VOCATIONAL EDUCATION"

H. H. STÉWART

Director of Industrial Arts, Mount Vernon, N. Y.

IN discussing vocational education, the author calls attention to the necessity for keeping in mind the distinction between vocational "by-education" and direct vocational education. He regards by-education as a by-product of activities designed primarily for other purposes. He would place under by-education much of what, in the past, seemed to be vocational education, including the old apprenticeship. For example, if a boy was apprenticed to a shoemaker, the probable outcome was usually conceived in terms of education or learning the trade, but it was nevertheless true that as regards the disposition of the learners time, the use of equipment and materials by him, and the graduation of tasks assigned, *production* was the primary and vocational education the secondary end. Similarly with a boy reared on the farm, he might learn thru the tasks as helper to be, in turn, a farmer. This is regarded by the author as by-education. Direct vocational education on the other hand "includes only those forms in which training for a specified vocation is the primary, central and controlling purpose, and in which production, recreation, control, etc., are all regarded as secondary, minor, or incidental purposes."

It would seem that in the past we have been rather playing at vocational education and "the schoolmaster type of mind" is frequently rapped for its conservatism or lack of appreciation of the need for adjustment. In the light of this book, present so-called vocational schools would seem to be only evolutionary steps toward "a few centrally located schools" proposed by Dr. Snedden. Democracy's way, however, is largely one of trial and

error and it will take years to produce the "social conviction" necessary for the establishment of, and the attendance at these central schools. It will be a slow, difficult task to convince some boys and their parents that it would be more profitable for the boys to spend two or three years at a vocational school fifty or one hundred miles away, and afterwards begin work at twelve or fifteen dollars a week than to start work immediately after leaving the local school, at seventeen dollars per week, in a position which offers little opportunity for advancement.

Dr. Snedden feels that while specific vocational education for the two thousand distinctive vocations followed by the workers of America "may be" desirable and is "probably" feasible, the greatest possibilities seem to lie in extension education where technical knowledge and special supplemental skills are given to those already employed.

The author points out that since one of the most conspicuous effects of social progress is the multiplication of our wants, vocational education becomes more necessary in laying the foundations for effective production. He outlines the essential factors of production as:

- a. Natural resources.
- b. Our social inheritance of invention. One of the chief aims of vocational education is to acquaint prospective workers with these.
- c. Capital—Under this head it is suggested that the young worker be informed about the part that capital plays in business even tho such instruction more properly belongs under civic education.
- d. Social organization—There must be government and laws to guarantee security and grouping of workers so that each may do his part, and also commerce with its sub-phases of transportation storing and marketing.

<sup>1</sup> Vocational Education by David Snedden. Published by The MacMillan Co., N. Y.

e. Individual inheritance. It is important that workers be placed where they can do the work for which they are naturally fitted.

f. Acquired powers—While right minimum standards of cultural and civic education should be maintained for entrance to a vocation, unnecessarily exacting standards should be avoided.

While a good general education is not decried, Dr. Snedden believes its significance in vocational education is often overestimated. Just to what extent general studies promote vocational efficiency is still undetermined. Just why some agricultural colleges require French and German for entrance, or why algebra is taught to commercial school students, or bookkeeping to stenographers, no one seems to know. If such subjects are imposed in the name of vocational education, he believes their function should be determined, otherwise vocational schools will develop into hybrids which do not provide real vocational education and which result in wholesale misdirection of energy. Even in the field of general education the relative values of the different studies outside of reading, writing and arithmetic is still undetermined.

In defining the aims of either general or vocational education, the author points out that it will aid us if we keep in mind man's two-fold relation to nature and art, namely as a producer and as a consumer, and that vocational education is concerned primarily with the former and general education with the latter. He asserts that effective methods in a particular field of vocational education, must be derived primarily from a study of the vocation in which proficiency is sought; that these methods are dependent also upon differentiation of aims; that no vocational education can really be worth while, except in the case of the individual who is really desirous of equipping himself for competency in the vocation selected; that therefore the need for greater development in vocational guidance be-

comes more pressing. The author contends that holding pupils in school by pre-apprenticeship training is not in and of itself a worthy objective unless the school has something of substantial profit to offer. It is recommended that during the period of training a worker should receive a definite wage for his labor. So much has been said in the past to the effect that men work or should work "for the joy of working" that it is refreshing to have Dr. Snedden's statement that this "is an assumption of artistic romanticism and of impractically idealistic philosophies. Men work now as they always have worked primarily to produce enough utilities wherewith to sustain an approved standard of living."

In speaking of vocational education for locomotive engineers, for example, should the establishment of schools become necessary, the author's attitude towards vocational education is at least partially exemplified: "A few score miles of track, a hundred locomotives, a couple of repair shops, a half dozen classrooms, and working part-time arrangements with a few neighboring railroads . . . ." Such a school "could apply entering tests, could base technical knowledge on practice, could easily impart social and health standards, and could graduate locomotive drivers tested and certificated. But if we tried to teach this calling in a comprehensive high school, it would of course, be difficult to provide all facilities. We could restrict admissions to those over 20 years of age. We could perhaps *get a second hand locomotive and 30 feet of track into a basement room; and of course we could also provide a nice library and some elaborate drawings.*"

The book indicates that the differentiation and "dissolving processes" within the vocations are continually balking even our best trade schools, pointing to the future probability that all vocational



education will be given in the industry itself on a cooperative basis.

In the past we have overestimated the possibilities of initial vocational education for beginners and underestimated the possibilities of up-grading or "post experience" education for selected persons of maturity. For young workers, short course or part-time training will be most effective, while for mature workers short course and "dull season" full-time "up-grading" instruction on the one hand and correspondence and other "self help" forms of extension education on the other,

will be found capable of almost indefinite development.

At the present stage of our progress in vocational education, many of the proposals in this book seem almost impossible of attainment. Judged by the standards outlined in this book, there are very few "pure bred" vocational schools in the country. The author has successfully linked vocational education with our social and economic crises and one cannot read it without reflecting seriously on the efficacy of our present educational system.



IN SUCH A HOUSE COLONIAL FURNITURE IS FOUND

## FURNITURE FASHIONS OF LONG AGO

FREDERICK J. BRYANT

Supervisor of Manual Arts, Auburn, Maine

**I**N PREPARING the second<sup>1</sup> article on Colonial furniture the writer considered it advisable to include drawings, which would show the characteristics of the different styles developed by Chippendale, Hepplewhite and Sheraton. These men were famous English cabinet-makers.

Chippendale is the first of the three, and was born in London sometime during the middle of the eighteenth century. As a

cabinet maker he was probably without an equal during his time of service. He used the carved cabriole or bandy leg, as it is commonly called, and often carved out of the wood the claw and ball foot. Most of his work was done on chairs and it is his skill on this kind of furniture that makes his name prominent. In his book of designs for cabinet makers he undoubtedly was influenced by the Dutch style.

Hepplewhite followed Chippendale. His

<sup>1</sup> The first article appeared in the October 1919, number

time was from 1780 to 1795. These dates do not infer that he was active in his work only during that time, but represents those years when his designs were the most popular. Unlike Chippendale, he employed no carving at all. He constructed his furniture on much more delicate lines and resorted to inlaying and marquetry. Instead of the cabriole leg he used the square slim tapering shapes. His designs of sideboards and chairs are beautiful and delicate in appearance.

Sheraton's designs did not win much favor before 1800, altho he published a book as early as 1793. In some respects his work is similar to that of Hepplewhite; much inlaying being used by both. Sheraton, however, differs in the design of his table legs. They were usually made round and tapering. He also reeded or fluted these legs. His chair backs are square-shaped, and while slender, they are somewhat stronger than those designed by Hepplewhite. The general tendency of Sheraton's style after the opening of the nineteenth century was rather heavy and was quickly followed by the Empire style.

The so-called Empire style of furniture was a classification which was brought about thru the events in French history. During the first Empire period and shortly after Napoleon's conquest, the new demand for things to commemorate these great events took for its bearing the ancient classic forms. Sweeping curves were employed in the designs of chairs, and elaborate carvings were used. Shortly after the Empire period style was adopted in this country it lost its charm and beauty. Finally it was entirely lost in the maze of ugly shaped black walnut furniture which followed, and with which all of us are so familiar.

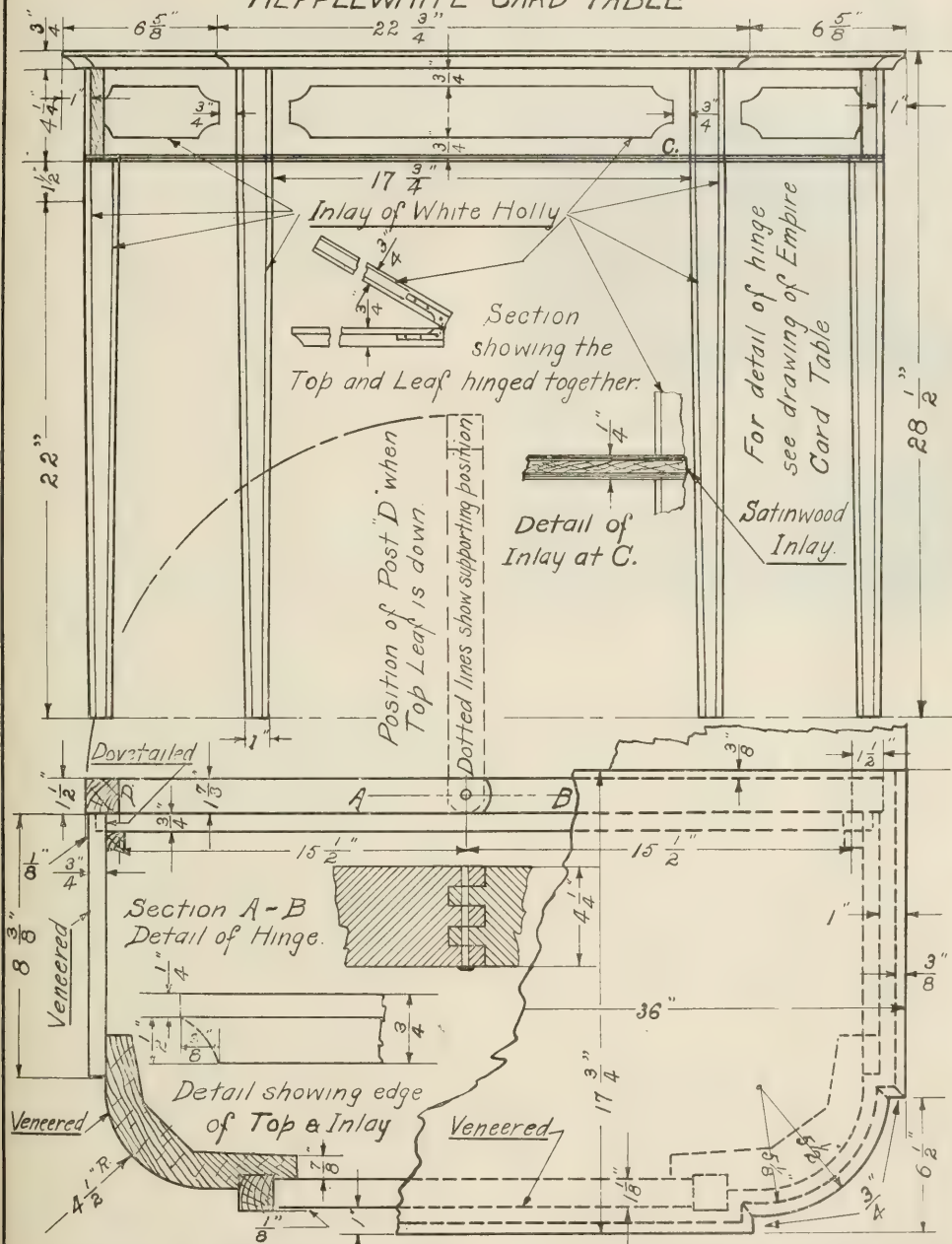
The one distinctly American style of furniture may be said to be the Mission

style, which was probably suggested from the Spanish missions in California. It is rather heavy, substantial, and in some respects like the Craftsman furniture which was developed in England by William Morris, and in this country by Gustav Stickley. Otherwise, practically all our furniture has been copied from European styles. Deterioration has been due chiefly to the adoption of factory made furniture, and the division of labor is responsible to a large extent for the lack of intimacy between the designer and the worker.

#### THE HEPPLEWHITE CARD TABLE

One afternoon last summer while walking toward home I met one of the school boys who wanted me to see his garden which he had planted back of his house. It was while there that I casually asked him if his folks possessed any old fashioned card tables which would not be too difficult for the boys in the manual arts course to reproduce. He said, "I don't know, but we got an old "busted" table in the house that has two top pieces, but I don't think that it is any good. Wait until I ask Ma." So it happened that I was invited in to see the old "busted" table. I found that the boy's description was altogether too harsh, for the table was not badly damaged at all. One hinge was broken and a small chip had been knocked off on the top leaf, but the table could very easily be restored. Furthermore, it was a fine little Hepplewhite card table, and the wood was mahogany. The posts and stiles were inlaid with white holly and ebony lines. I made a free hand sketch of it and took the necessary measurements. Then I made arrangements to call around later to take a picture of the table, but it so happened that the family in the meantime had held an auction, which I missed, and after selling their household effects they moved

## HEPPLEWHITE CARD TABLE



Owned by Mrs. S. F. Prentiss,

Made 1785-1795

Saco, Maine.

Measured &amp; Drawn by F. J. Bryant, July 21, 1919.



away to California. I doubt if the table went with them, so while I have the drawing I regret to say that the picture was not taken.



SHERATON CARD TABLE

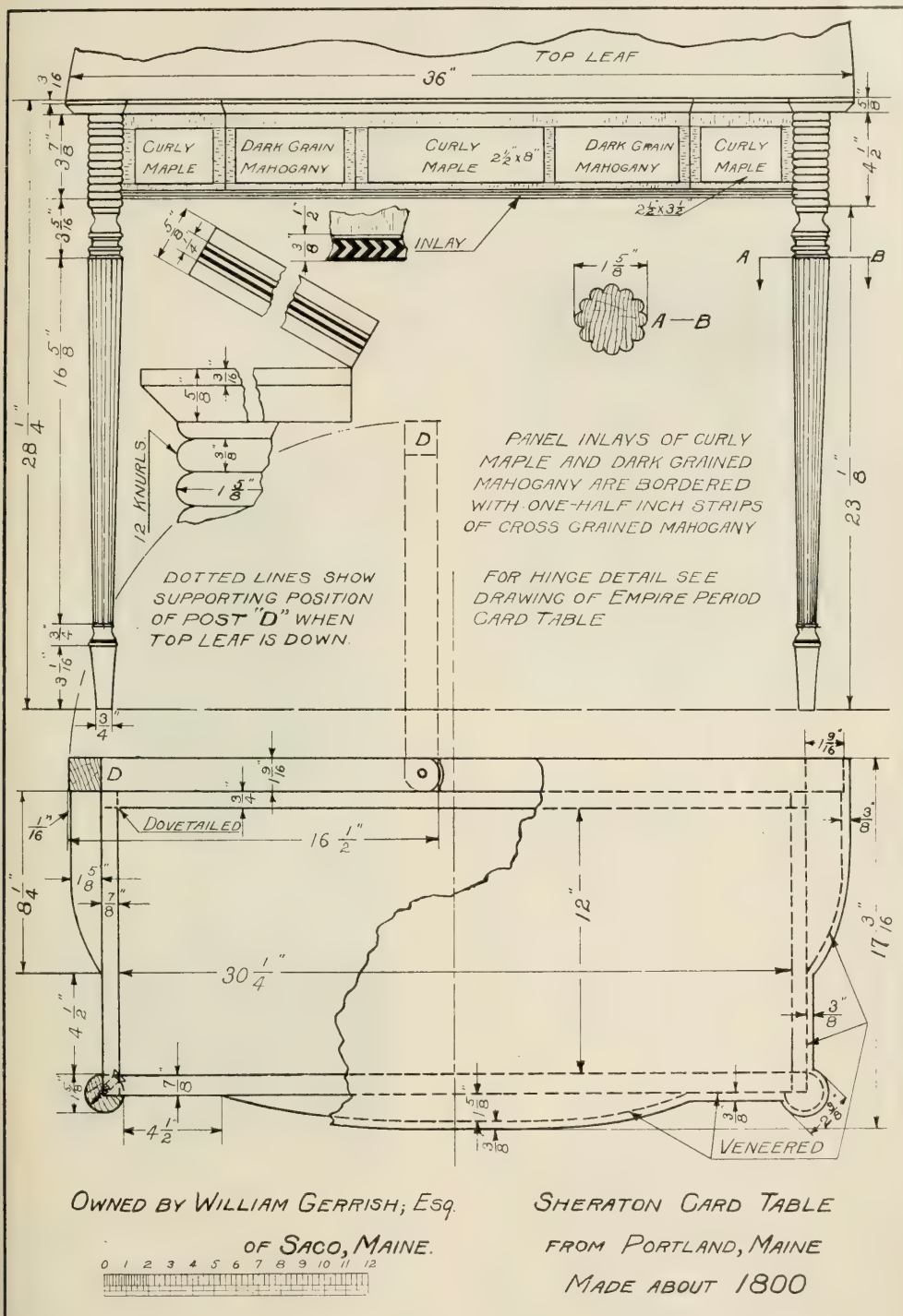
The frame of the table is dovetailed in the back corners and this is really necessary in order to support the extra top leaf when in a horizontal position, as one post is not fastened permanently to its corner, but permits swinging around on its axis. The hinge details are not given on this drawing because their dimensions checked up very much like those found on the Empire card table. This is also true of the Sheraton.

SHERATON CARD TABLE

The Sheraton card table is one of the prettiest I have ever seen, and has been in the Gerrish family for a great many years. The posts instead of being square like the Hepplewhite, are round and tapering. All four legs are fluted, the front two being round where the knurls are shown, and the two rear posts are square down to the lower edge of the stiles. It

may be well to say that only the front two posts are shown on the drawing. The inlaying and the pretty mahogany are remarkable in color; the picture does not do the table justice. Like the Hepplewhite, one post can be swung out, and consequently the corners of the frame are dovetailed. The front posts are notched to fit into the corners of the table frame, and screws are used to hold them in place.

Mentioning screws as a means of holding joints together on old fashioned furniture may cause the uninformed to question the genuineness of antique furniture using such contrivances. All of which reminds me of an incident that a friend of mine told me a few years ago when he was employed as an expert cabinet maker by the famous Davenport Furniture Co., of Cambridge, Mass. With two other workmen he was sent to Buffalo, N. Y. to do some special work for a wealthy man who lived in that city. At the time, this man was just getting interested in antiques. Among some of his recent collections were three very old tables which had been obtained from a dealer in New York City. One day during the noon hour these three men stopped to examine the tables. Turning them over they found that some of the joints were held together in the corners by screws. They instantly came to the conclusion that the tables were reproductions and so told the owner. All the trouble caused by this apparent discovery, by the owner who had the tables shipped back to New York, hinged upon the meager information submitted by one of the workmen. He had in his pocket at that time a small pocket handbook, such as is distributed by manufacturers of mechanics tools, saws etc. This little inoffensive booklet contained a few pages of useful information and knowledge. Just one line caused all the mischief—"screws were first made in 1854." The tables were made before



Washington's time, and screws were used—but they were all hand made. The little booklet did not say that, and it was not until the dealer himself came on to explain the situation before the

should have been done. However, the table is attractive and is easy to copy.

#### MAHOGANY TIP-TOP TABLE

The Tip-top table really belongs to the previous article which was given in the October, 1919, issue of this magazine. Like the Sheraton Card Table it is owned by Mr. Gerrish, and its history is similar. The top is quite unusual, as most tables of this sort are either round, oval or serpentine in shape. The top rim and center is inlaid with a very neat holly and ebony line. The center inlay is of curly



SHERATON WORK TABLE

tables could be returned. Screws were used as far back as 1760, but were not popular owing to the time and expense involved in making them by hand. In 1817 an automatic screw-making machine was patented by a German Clock maker but it was not until 1854 that an invention was perfected enough to warrant the manufacture of a practical machine which could turn out the work.

#### SHERATON WORK TABLE

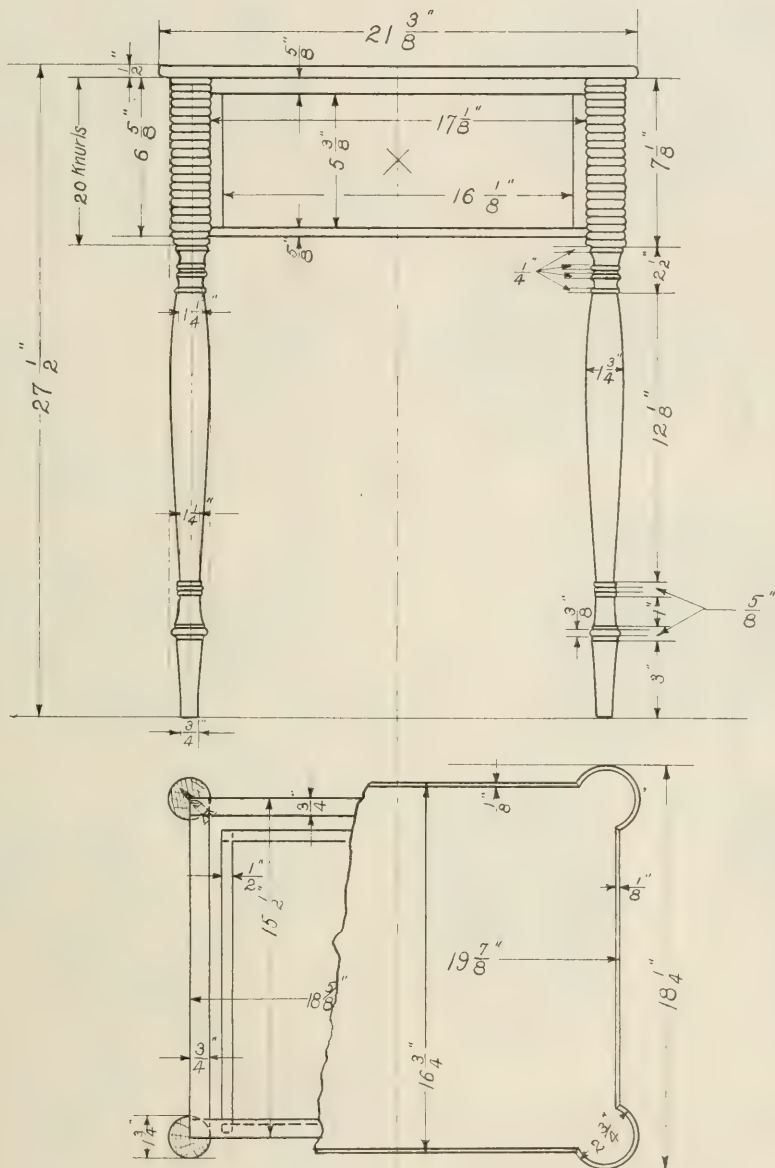
With the Sheraton card table I have shown a so-called work table designed along Sheraton lines to some extent. The drawer front is made of curly maple and the rest of the table is of mahogany. The maker did not carry the detail far enough to make the table a cherished possession. He neglected to flute the posts, which



MAHOGANY TIP-TOP TABLE

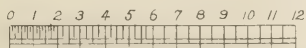
maple or satinwood. This table would not be too difficult for the student to reproduce in the shop, and affords correlation in turning, inlaying and cabinet work. The standard is turned and a snap catch

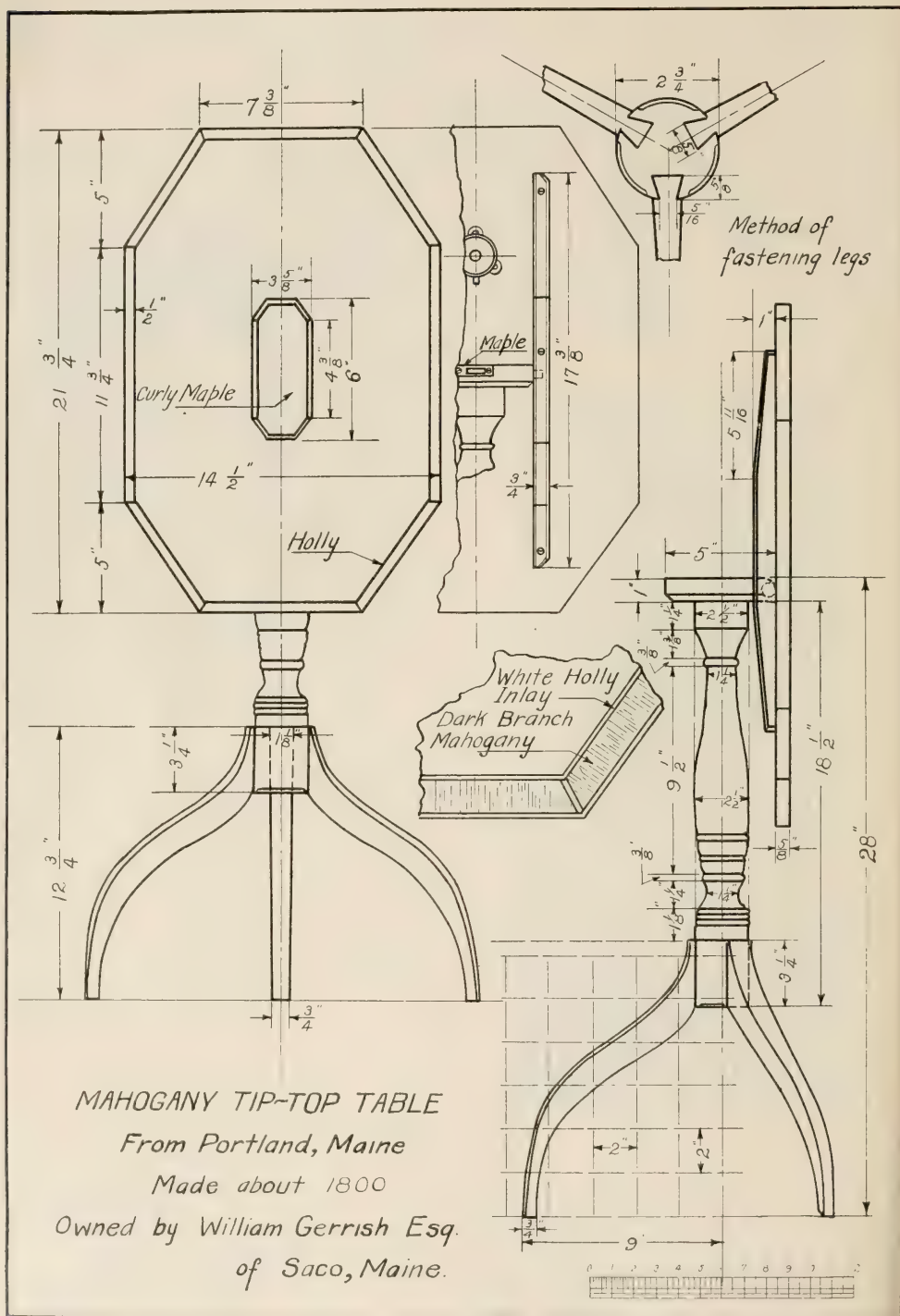


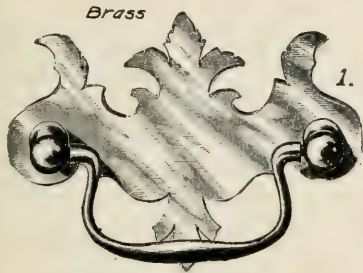


OWNED BY MRS. FRANK L. DAVIS  
OF SACO, MAINE.

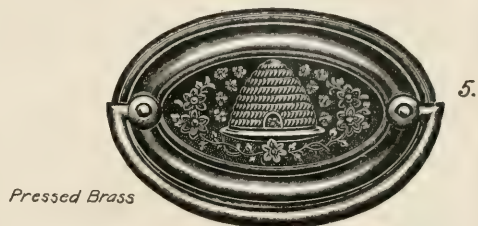
SHERATON WORK TABLE  
FROM BUXTON, MAINE  
MADE ABOUT 1820







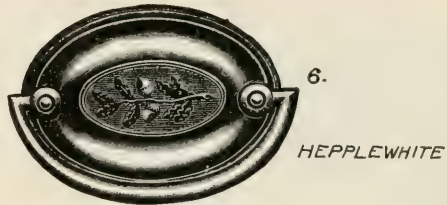
CHIPPENDALE 1765



HEPPLEWHITE 1795



CHIPPENDALE 1780 & HEPPLEWHITE



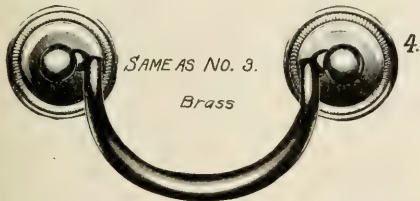
HEPPLEWHITE



SAME AS NO. 2 HEPPLEWHITE



HEPPLEWHITE



SHERATON 1800-1820



SHERATON

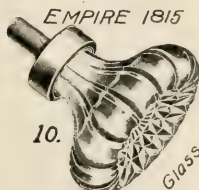
SHERATON 1800



Brass



Brass



Glass

SPECIMENS OF  
COLONIAL FURNITURE  
HANDLES USED ON THE

CHIPPENDALE, HEPPLEWHITE, SHERATON AND EMPIRE STYLES.

1750-1780

1785-1795

1800-1810

1810-1830.



holds the top in a horizontal position when wanted that way. The tripod feet are dovetailed into the standard and are plain tapered pieces of mahogany.

#### EMPIRE CARD TABLE

The Empire card table is a splendid specimen of the style which predominated after the passing of the Sheraton influence.



EMPIRE CARD TABLE

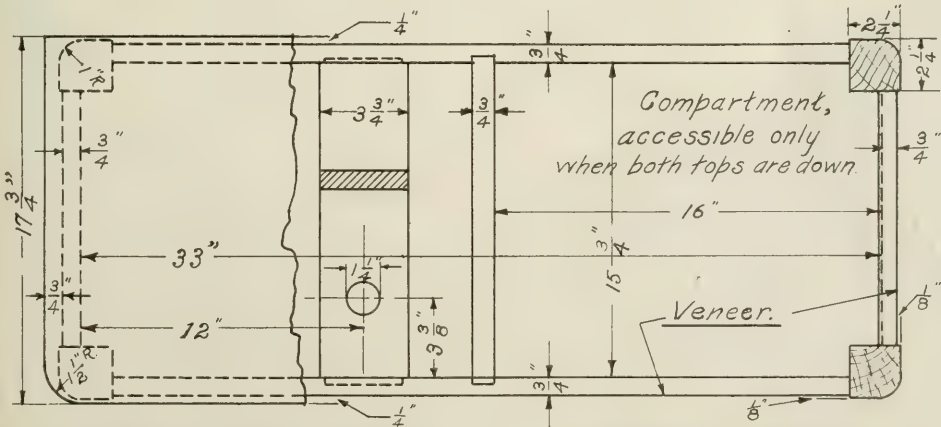
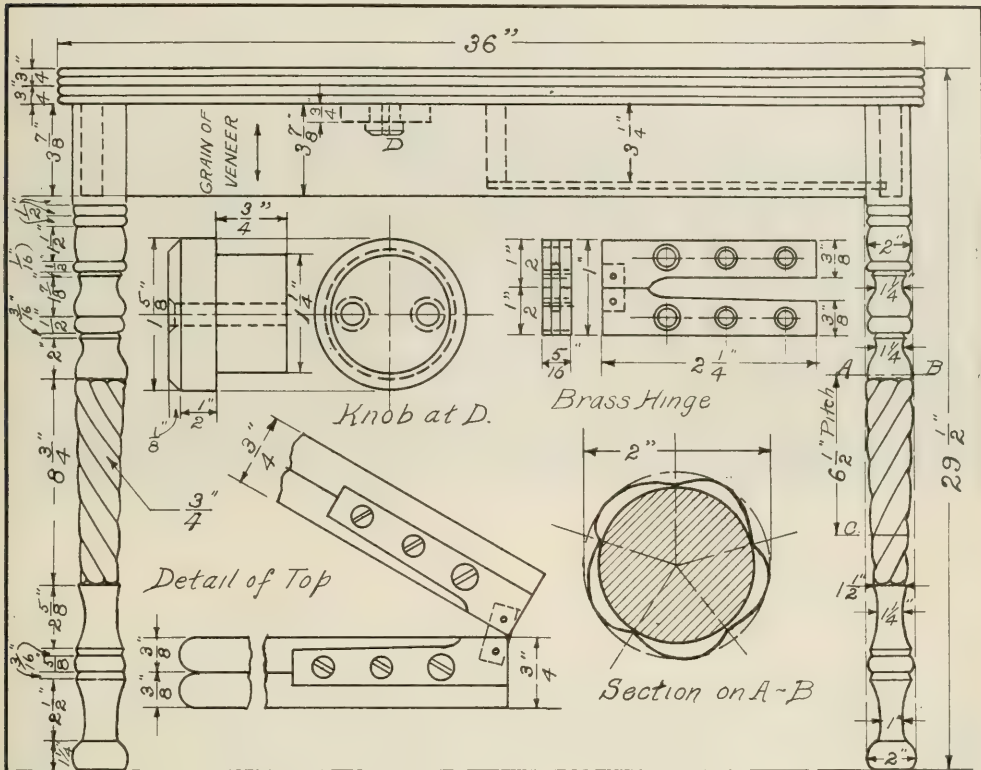
It is made of mahogany and the stiles are veneered with cross-grain wood. The top leaf can be lowered as on the other two card tables, but the manner of supporting the extra leaf is wholly different. In this case all four posts are securely fastened to the frame. The main table top is pivoted in such a way that it can be swung around at right angles. When this is done the other leaf is simply lowered into place and rests on the top edge of the frame. On the under side there can be found a fairly large wooden knob or button which acts as a center. The com-

partment inside is suitable for use only when both tops are set in a horizontal position.

One afternoon I decided to call around and pay a visit to a local collector of antiques. During the course of our conversation he mentioned the fact that near where I lived there had been an auction a few years before. Among some of the articles disposed of was an Empire card table. He said that he had often wished that he had bid for it, but at the time he was only particular to purchase rare types and did not think that an Empire was worth buying. However, his opinion has changed since then, and from his description of the table and knowledge of a part of the history of it, I knew at once that he had reference to this table. As antiques are not so plentiful to buy today I noticed that his sales room contained almost any old fashioned piece if it had, at least, a utilitarian purpose.

Not any of these tables have been stained, as the San Domingó mahogany evidently has the proper color tone, altho all have been varnished some time in the past. In fact, they have been varnished too much, and, if they were to be refinished it would be necessary to wear these coatings down to the bare wood. I recently saw a fine serpentine Colonial bureau and secretary that has been refinished and the final application was a wax finish.

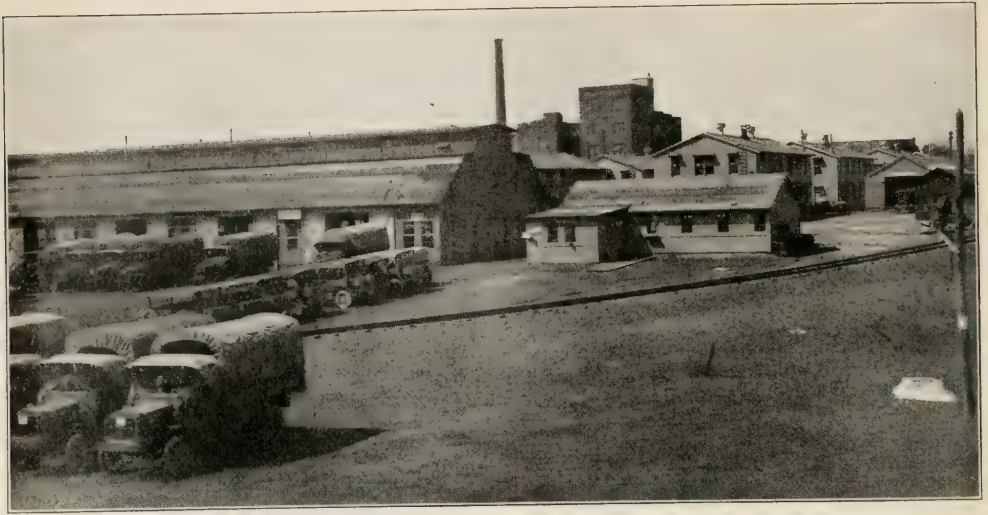
One writer says that it takes about a century for one complete revolution for the wheel of fashion to revolve. What was admired and cherished during the early days of this country were later despised by the following generation or two. To-day the trend in furniture fashion is toward the Period styles. Have you noticed the decline of the Mission style in favor of the William and Mary, the Queen Anne, the Chippendale, the Sheraton and the Hepplewhite?



Owned by Frank L. Davis, Esq.  
Measured & Drawn  
by  
F. J. Bryant. July 15, 1919.

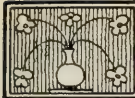
EMPIRE PERIOD  
CARD TABLE  
From Saco, Maine  
Made 1800~1820

## PHOTOGRAPHS FROM EVERYWHERE

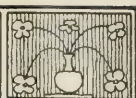


TWO VIEWS OF THE U. S. ARMY MOTOR TRANSPORT SCHOOL, CAMP HOLABIRD, BALTIMORE, MD., COL. GEORGE P. HAWES, JR. COMMANDANT. THE BUILDINGS IN THE LOWER PICTURE, READING FROM LEFT TO RIGHT ARE FOR ADMINISTRATION, CONSTRUCTION ENGINEERING, LIBRARY, WOODWORKING SHOP, CHAUFFEURS, SHEET-METAL SHOP, TIRE REPAIR, MECHANICAL DRAWING, ENGINEERING.





## EDITORIAL REVIEW FOR THE MONTH



### THE 300TH ANNIVERSARY OF AMERICA

**T**HIS year and this month ought to have a special significance to every American, whether his ancestors came over in the Mayflower or in the steerage of a modern liner. Especially in this time of social and political unrest, when in every part of the world men are looking and longing for industrial and political freedom, it is steadying and reassuring to pick up Bradford's "History of the Plymouth Settlement" and re-read the Mayflower compact, out of which our political institutions have grown:—

"In the name of God, Amen. We whose names are underwritten, the loyal subjects of our dread sovereign lord, King James, by the grace of God, of Great Britain, France and Ireland, King, Defender of the Faith, etc., having undertaken for the glory of God, and advancement of the Christian faith, and honour of our king and country, a voyage to plant the first colony in the northern parts of Virginia, do by these presents solemnly and mutually in the presence of God, and of one another, covenant and combine ourselves into a civil body politic, for our better ordering and preservation, and the furtherance of the ends aforesaid; and by virtue hereof to enact, constitute, and frame, such just and equal laws, ordinances, acts, constitutions, and offices, from time to time as shall be thought most meet and convenient for the general use of the Colony, unto which we promise all due submission and obedience. In witness whereof we have here underscribed our names at Cape Cod, 11th of November, in the year of the reign of our sovereign lord, King James of England, France and Ireland the eighteenth, and of Scotland the fifty-fourth. A. D. 1620."

First there was allegiance to their God; they were urged on by a passion to advance their Christian faith free from oppression. To accomplish this they recognized the fundamental necessity of law and order, and they proceeded to establish a government of their own, to which they promised submission. "We \* \* do \* \* covenant and combine ourselves into a civil body politic \* \* unto which we

promise all due submission and obedience."

After 300 years we do well to remember this rock of safety upon which our nation is founded. As long as we live up to the principles of this compact we will progress as a Nation.



THE MAYFLOWER OF 1620

### SKILL AND EDUCATION IN COLONIAL NEW ENGLAND

**T**HE celebration of the 300th anniversary of the landing of the Pilgrims leads us to ask, What kind of men were they who came over to this new continent and established a new nation? Were they merely idealists or were they also skilled workers? What was their attitude toward education?

As one reads the history of colonization enterprises he learns that many of the men who came to America as colonists were sent here. They were criminals or shiftless people that England wanted to get rid of. Many were indentured for a term of years after which, under certain conditions, they became free citizens and were given land to cultivate. It was inevitable that, under such conditions, some kind of strong arm of government was necessary to protect the honest colonists. This practice of sending the un-

desirable elements of society to build up English markets and collect raw material for English manufacturers was denounced by far-seeing men of the time. Lord Bacon, for example, in his essay on plantations (1625) said:

It is a shameful and unblest thing to take the scum of people, and wicked and condemned men, to be the people with whom you plant; and not only so but it spoileth the plantation; for they will ever live like rogues, and not fall to work, but be lazy and do mischief, and spend victuals, and be quickly weary, and then certify over to their country to the discredit of the plantation. The people wherewith you plant ought to be gardeners, plowmen, laborers, smiths, carpenters, joiners, fishermen, fowlers, with some few apothecaries, surgeons, cooks and bakers.

Fortunately it was just such desirable mechanics and other skilled workers as Bacon describes that constituted by far the larger proportion of the New England Colonists. To their ideals of civil and religious liberty they added the practical skill and the will to work that is essential in all community building whether in colonial times or today. They were constantly reminded of the value of skill of hand. As needs grew they would send back to England for a potter, a tanner or some other skilled worker in a trade not included in a list of their own special skills. Because they realized the necessity of skilled tradesmen, apprenticeship was early established and became "the most fundamental educational institution of the period."\* Apprenticeship was compulsory upon all children "not having estates otherwise to maintain themselves," and it should be further noticed that this apprenticeship carried with it the fundamentals of general education. After a time public schools were established which took over and developed the general education, but in early days the master was responsible for both the train-

ing in the craft and mysteries of the trade and the imparting of the fundamentals of a general education.

It is not necessary for our present purpose to draw any comparisons with our present practice, but it is worth while to notice that in the early colonial days general education and trade instruction went hand in hand.

#### EFFECT OF CONTINUATION SCHOOLS UPON THE REGULAR DAY SCHOOLS

TWO of the results of the compulsory continuation school laws that have been passed in several states seem to be, first, better administration of the granting of work certificates, and second, a tendency among employers to refuse to employ any person under sixteen years of age. These results will, of course, have the effect of increasing the regular day school attendance. This is just what ought to happen. The only sound reason for building up a large continuation school attendance is that the pupils attending such a school will not go to regular day schools. We trust that no group of continuation school teachers will become so near-sighted as to be unable to recognize this statement as the truth.

On the other hand, it would be unfortunate indeed if the only effect of the continuation school upon the regular school would be to increase its attendance. There is another lesson for the public day schools. Their administrators should remember (and we would have the fact repeatedly forced upon their attention) that the reason the children are in industry or commercial life and consequently, by compulsory law, in the continuation school, is that the regular schools failed to interest and hold these pupils. Only in a small proportion of cases, we are told, is economic necessity the cause of children going to work before sixteen years of age. It would be a pity if the public

\*Seybolt: Apprenticeship and Apprenticeship Education in Colonial New England and New York.

school men and women were to merely let the law take its course and do nothing to welcome again to the regular school those who have been crowded back into it and nothing to prevent the desire of others to get out of school and go to work.

From our point of view this is the golden opportunity for the regular public school to demonstrate its ability to meet more completely the needs of primary and middle school education. To do this the school must recognize in practice as well as in theory the variety of interest and capacities of its children of twelve to sixteen years of age. This means that it must include instruction and provide school experience in those types of occupational work which make the school life real life to the pupils, and prepare them in fuller measure for earning a good living as soon after the sixteenth birthday as they leave the public school.

We do not fail to recognise that some pupils are better off educationally if they spend their years from fourteen to sixteen in industry and the continuation school. And we certainly do not depreciate the great work ahead for the continuation school, but we do wish to emphasize the point that for the typical American boy or girl the best place for either of them between the years of fourteen and sixteen is in the regular day school, provided that school is what it ought to be.

#### PRESENT DAY TENDENCIES IN EDUCATION

**S**HORTLY after the above paragraphs were written there came to hand a clipping from the *Boston Transcript* giving an account of the meeting of the Norfolk County (Mass.) Teacher's Association on October the 22nd. In this were a few striking quotations from an address on "Educational Tendencies of Today" by Dr. Frank P. Graves, dean of the School of Education, University of

Pennsylvania, and editor of the *Educational Review*. Thru the cooperation of Dr. Graves we are enabled to give in full that part of the address which referred to vocational education. Its emphasis on reform in the regular public schools and its appreciation of the importance of vocational guidance as a factor in public education are worthy of special attention:

Probably the movement that is most obvious and comes most readily to the minds of all is that of vocational education in its various phases—industrial, commercial and agricultural. There is now especial need for this type of training in industrial lines. Since the industrial revolution and the development of the factory system, social conditions have become infinitely more complicated. It is no longer possible, as it was under the old regime, for a boy to enter a trade as an apprentice, then after seven years become a journeyman and work for the public thru his master, and finally, after another period, become the master himself, and, marrying his master's daughter, succeed to the business. For one thing, the master now has not enough daughters to go around. And, what is more to the point, he is not especially interested in training his employees, for the present mobility of labor permits of no guarantee that he will ever reap the benefit of such efforts and the modern industrial plant is but poorly adapted to supplying the necessary theoretical training for experts.

In consequence, thruout the nineteenth century most artisans had to learn their trade by "stealing" it. A young man would enter an industrial plant by pretending to be a latheman, machinist, engineer, fireman, cooper, or what not, altho he knew nothing of the line, and there learn all that he could before he was discharged for incompetence. He would then seek another place, another, and another, until at length he had managed surreptitiously to obtain sufficient skill to practice his craft. Obviously such a procedure was both uneconomic and unethical, and in the twentieth century the school has been called upon to assist in the solution of these new industrial problems, altho at first such a suggestion was treated with scorn.

In sensing this need for industrial schools, the European countries far outstripped us. The schools of Germany in particular have maintained effective training of this sort for nearly a century, but the United States during the past decade has also been making most rapid strides in the same direction. In America the foundation of industrial schools was for half a century confined to philanthropic



and private enterprises, and the training was offered largely in the evening. About the middle of the century there began to arise such institutions as the Cooper Union in New York, the Franklin Institute in Philadelphia, and the various mechanics' institutes in Cincinnati, Richmond and elsewhere. The public schools were slow in following this example, and instruction in the daytime was even later in arriving. By the twentieth century there were but three schools offering day training in industrial vocations, and all of these were the result of private foundations. But at present industrial education at public expense in the day, as well as at night, is widespread. The school systems of all progressive cities afford vocational instruction in elementary schools and technical high schools, and in many cases give an opportunity for part-time work, thru which the pupils gain some theoretical and formal training while obtaining their practical experience and earning a livelihood.

All this development of vocational schools and vocational training marks a great advance, but it also involves a grave danger. Now that we have become conscious of such a long-neglected need, we have been rushing in headlong to supply it, without due attention to ways and means. With the overwhelming demand for a training that will produce an immediate increase in skill and efficiency, we have set up separate schools for vocational training. And many pupils, because of their own caprices or the selfishness of their parents or guardians, are liable to be catapulted, with little or no consideration, into a life of manual labor, when they may have had possibilities for more effective service to society thru an intellectual life.

Under the old social conditions only too often a first-class farmer was spoiled to make a fourth-rate preacher, and sometimes a man intended by Providence for a carpenter lost his way in life and turned up somewhere as a surgeon. But how much greater will be the loss to society if, drawn by the tremendous interest and popularity of the current demand for industrial training, a man that might have widened the vision and heightened the inspiration of thousands, or one who might have proved a world-famed surgeon, alleviated an immensity of human suffering, and, in the aggregate, added hundreds of years to human life, is relegated to driving a plow or planing boards and driving nails for a career! Moreover, these separate industrial schools are deprived of the intellectual and cultural values that might be found in this type of training, and, while the pupil in these schools may secure skill, he acquires little that is of value to manhood or citizenship.

We have reason to congratulate ourselves, there-

fore, that vocational education seems within the past year or two to have passed beyond its frenzied stage. Happily it is not ruined, but it is no longer a fad. We are just beginning to examine it more carefully and see whether we can not retain its merits without its dangers. This is, of course, among other things, the significance of the courses in "vocational guidance," which are being generally introduced to reduce the errors in selecting a life career to a minimum. As yet the methods of determining aptitude are crude and rough. They consist for the most part in various methods of studying occupations under the guidance of the teacher, who endeavors to help the pupil discover the field in which he is most interested and for which he is best fitted by nature. A more scientific method of deciding one's life work will soon be found. The way is pointed by the remarkable results obtained thru the mental tests given in the United States army at the beginning of the war. By means of these psychological examinations we were able within a few weeks to select and classify skilled workmen in all lines and to produce officers that at once equalled those of the old countries of Europe after years of military training and atmosphere. The tests, even as they have been revised and strengthened for use in school and college, are by no means perfect. Not all the factors that enter into that complex known as "general intelligence" are known, to say nothing of our inadequate analysis of the special abilities that constitute success in the various occupations. But that we are on the way to a solution, there is no question.

To meet this situation, too, we have the recent suggestion of Bonser that the industrial element be embodied as a part of the regular school work for all from the beginning, and that the formal studies (reading, writing, arithmetic, etc.) be made to grow out of it. In this way a boy would be enabled to find his real place in life, and we should secure vocational *education*, as well as vocational training. As Dewey puts it, the trade school must at the best be considered "a palliative and makeshift," to atone partially for the formal and ineffective character of the prevailing elementary education, and, leading as it does to fixed classes, it has no permanent place in a democratic society.

#### OUR CALIFORNIA REPRESENTATIVE

WE are glad to announce that Charles L. Jacobs, supervisor of classes for teachers of trade and industrial subjects of the University of California, is now the California representative of this Magazine. This announcement is

another step in the working out of the policy of the Magazine to have men of standing and news-gathering ability in the sections of the country most distant from the office of publication. The list of representatives now includes; Francis L. Bain for New England, W. H. Dooley for New York and vicinity, John F. Friese for the Northern Border, Edward G. Anderson for the Northwest, Charles



CHARLES L. JACOBS

L. Jacobs for California and E. E. Ericson for the Southwestern states east of California.

Mr. Jacobs is in intimate touch with the progress of industrial education and the manual arts and has both the industrial and the professional viewpoints. After working in the pattern shop of a large foundry for several years, he entered Teachers College, Columbia University, where he specialized in manual training. Upon completing his course he obtained a position with the Indianapolis schools as teacher of manual training. At the end of two years he returned to Teachers College having been awarded the Manual Training Scholarship. Upon going out in the field again he was in-

vited to participate in an experiment and demonstration which was designed to help introduce manual training into the Philadelphia schools. At the conclusion of this work an opportunity came to him to go west, and he accepted. This opportunity came from San Jose, California. He stayed there several years introducing, first, the grade work and then the high school work, and later directing the vocational guidance. During his stay in San Jose he took some time off to engage in further study at Stanford University, and in 1912 received his master's degree from that institution. From San Jose he was invited to take the position of director of industrial education and vocational guidance in San Francisco. There he remained until he was called to his present position with the University of California, where he holds an associate professorship in industrial education, in charge of the classes for the training of trade and industrial teachers. In this latter capacity he also represents the State Board of Education.

#### ART TRAINING AND COMMUNITY NEEDS

**I**N a brief after-dinner speech recently P. A. Bergner, a prominent Peoria merchant, called attention to evidence of the progress of art in American life, which must be recognized by anyone who gives the matter thought. He recalled the kind of efforts to attract trade which were made by merchants thirty years ago, and compared them with the artistic window displays of today. He pointed to it as a striking evidence of progress in the development of taste among the American people and as an argument for more art education of the practical kind.

A statement recently made by Dr. James P. Haney, director of art instruction in the New York City high schools expresses the same thought still more fully. He says:

The art training of the public schools should be a practical training, touching closely the needs of the community; it should aim to cultivate taste and apply that taste, when cultivated, to the homes, the dress and the business of those it trains.

A very mistaken idea is to hold that art is the business only of the artist. As a matter of fact, the principles of art touch every individual and are used more or less consciously by all. The house-wife has to decorate her home. She may use the principles of decoration well or ill, but use them she must, in the adornment of her house, in her dress, and even in the flowers which she plants in her garden or hangs in her window boxes.

The business man cannot escape from the use of art's principles for a single day. If he would "dress" a shop window, get up a circular, design a letter head, or arrange a newspaper advertisement, he must consciously or unconsciously use the rules which art has devised in design, color and arrangement.

Art, in other words is not for "the few," it is for "the many," for the many have to use it. It is not held that the training of the public schools will produce artists, but it is held that it will raise the standards of taste thruout the community. Higher standards of taste mean advances along many lines. We cannot have people with such standards without

an effect on trade. People who know better things, demand better things. Thus the art teaching of the public schools has a practical relation to the business interests of every community.

Besides this, there is a civic value in art teaching. One cannot raise standards of taste without raising standards of appreciation. The man or woman who strives to make his house better, takes pride in having his town made better. Every civic "booster" knows that there is nothing which stimulates the interest and pride of citizens more than a consciousness of the growing beauty of the town in which they live.

Thus the spiritual value of art training goes with its practical value. Many of those who cannot see the spiritual worth can see the practical worth. One of the surest evidences of the broadening realization of this lies in the fact that every progressive community thruout the Union is using art training in its public schools as a means of advancing community interests. The reason is plain. One cannot change materially, the taste of a people already grown up. To effect these standards, permanently, one must begin with the children in the public schools. This accounts for the enormous spread of art education thruout the Union. Art teaching is not a fad, it is an economic question with an economic reward to every community that realizes this and forwards the art work of its schools.

## A POINT OF VIEW

IF I had the job of feeding all the people of a city outside of those who eat in their own homes all the time and I wanted to make my contract profitable, I should not only feed them with reference to place, time, and menu but I should so "sell" them food that they would buy; in other words create a market.

I should have a counter restaurant at the railroad station, a day-and-night lunch cart at the car barns, a 12-2 P. M. business man's lunch in the downtown section for professional and business men, a 6-8 P. M. table d'hôte at the hotel, a French pastry shop for pastry eaters and bargain hunters, a tea-and waffle place for *de luxe* tastes, and some lunch rooms of partial self-service wisely dis-

tributed. In other words, I should organize my business to feed people. This means service. It means a survey. It means attention to where they work, where they live, what time they eat, what they eat, and why they eat.

In other words, if I am an educational restaurateur it is my business to know my clientele, its business, its habits of work, play and study, its desires, its needs, and its possibilities for fitting into my business.

I want my "car barn" education in factories, stores, and offices so as to catch the workers while they are on the job. I want my "railroad station" education to catch the person who is about to enter industry or commerce thru the vestibule school, or to catch him for a readjustment



in his vocational pursuit. I want my "business men's" schools for trades and professions. I want my French pastry" education for those with leisure, and "waffles" for those who know not yet what they want and have time enough to decide over the tea cups. But most of all I want my *cafeterias* for those who need quick and comprehensive educational service.

Space is limited and the reader must use his imagination in what follows. Imagine an educational self-service. It has electric signs for night schools. It is located where people work and recreate. It has a printed menu and suggestions for educational diets—those with mental hardening of the arteries and vocational Brights disease as well as those who have occupational hay fever. It employs a good vocational guider who assists in choosing menus. It has its food temptingly displayed and no academic mysteries about its preparation. It has food that costs from 10c worth of time to \$1.00 worth of effort. It has but little educational system of fancy cooks, waiters, and checks. It affords a range of satisfaction of appetite from educational *a la modes* to turkey and fixings. Its pay-at-the-desk check is prescribed by school clerks with the speed of a cashier. It gives one a chance to wait upon himself and teach himself. It has no frills or flowers. It is clean cut, definite, and functioning with appetites, pocket-books, and time. It has its club breakfast combinations, and six o'clock season of service as well. It reduces heavy overhead by serving many people at certain hours and fewer people at all hours between.

Such a school is located at Denver, Colorado, and is presided over by an

educational *chef* who is a rare genius—a Miss Griffiths. Some day I may write about her school. It teaches Japanese servants to talk American, Indians to speak better English and negro women to write letters. It teaches women to manicure and shampoo. It trains milliners to be better milliners. It makes telegraphers out of ex-soldiers. It enrolls garage workers into a dull season class in auto mechanics. It teaches stenography, bookkeeping, typewriting, accountancy, etc. It takes young nurses and gives them a short course in cooking for invalids. It instructs messenger boys of the W. U. T. Company. And this is not all. But it is enough to furnish suggestive thought.

It is a cafeteria school. Its brilliantly lighted sign rivals that advertising Charlie Chaplin's antics. It is close to the Main Street. It is open from 8:00 A. M. to 10 P. M. all the year round. It gives ice cream or meat or both, one vegetable or five. It takes in anyone over fourteen and under one hundred—white, black or mixed. One can stay one hour or four years—or even twenty. In describing this school I can only throw out short sentences in a short space. Either visit it or else patronize a food cafeteria and see how you might manage an educational one.

In brief it is in its action like Ezra Cornell's statement when he founded Cornell University, when he said, "I wish to found an institution where anyone may study any subject." Only Miss Griffith's cafeteria has gone two steps more by adding "at any time, for any purpose." This is educational democracy with a vengeance and educational hypocrisy reduced to a minimum.

—ARTHUR DEAN.

*The minds of children should be powerhouses, not merely storehouses.*

—FREDERICK J. TRINDEN.

## WASHINGTON CORRESPONDENCE

### THE JUNIOR EMPLOYMENT SERVICE

**D**URING the past few months the Junior Division of the United States Employment Service, Department of Labor, has been at work developing plans and setting in motion the machinery for cooperating with the public schools and other agencies. The problems to be attacked are "the sources of junior labor supply, the labor demand, the educational opportunities which are offered to prepare the supply to meet the demand, the best known methods of organization and administration in junior guidance and placement offices, methods of cooperation with the schools and other agencies, and with employment managers, employers' associations, and labor unions," and the like.

The personnel of the Washington office will give some idea as to how this task is being approached. The Director General of the U. S. Employment Service is John B. Densmore. The Director of the Junior Division, and Assistant to the Director General, is Mrs. Anna Y. Reed, formerly Director of Vocational Guidance in the Seattle, Wash., public schools. Emery T. Filbey, professor of industrial education in the University of Chicago, on leave of absence from the University, is engaged temporarily with the Junior Division as Associate Director. The staff also includes, besides the clerical force, two men engaged in research and organization work in connection with the national office: L. E. Blauch, formerly statistician with the Bureau of Education, and Lt. A. Scott Lee, formerly director of education, Hoff General Hospital U. S. Army, Staten Island, N. Y.

### DEMONSTRATION CENTERS AIDES

**F**OR the present the activities of the Junior Division are devoted mainly to assisting in the establishment and

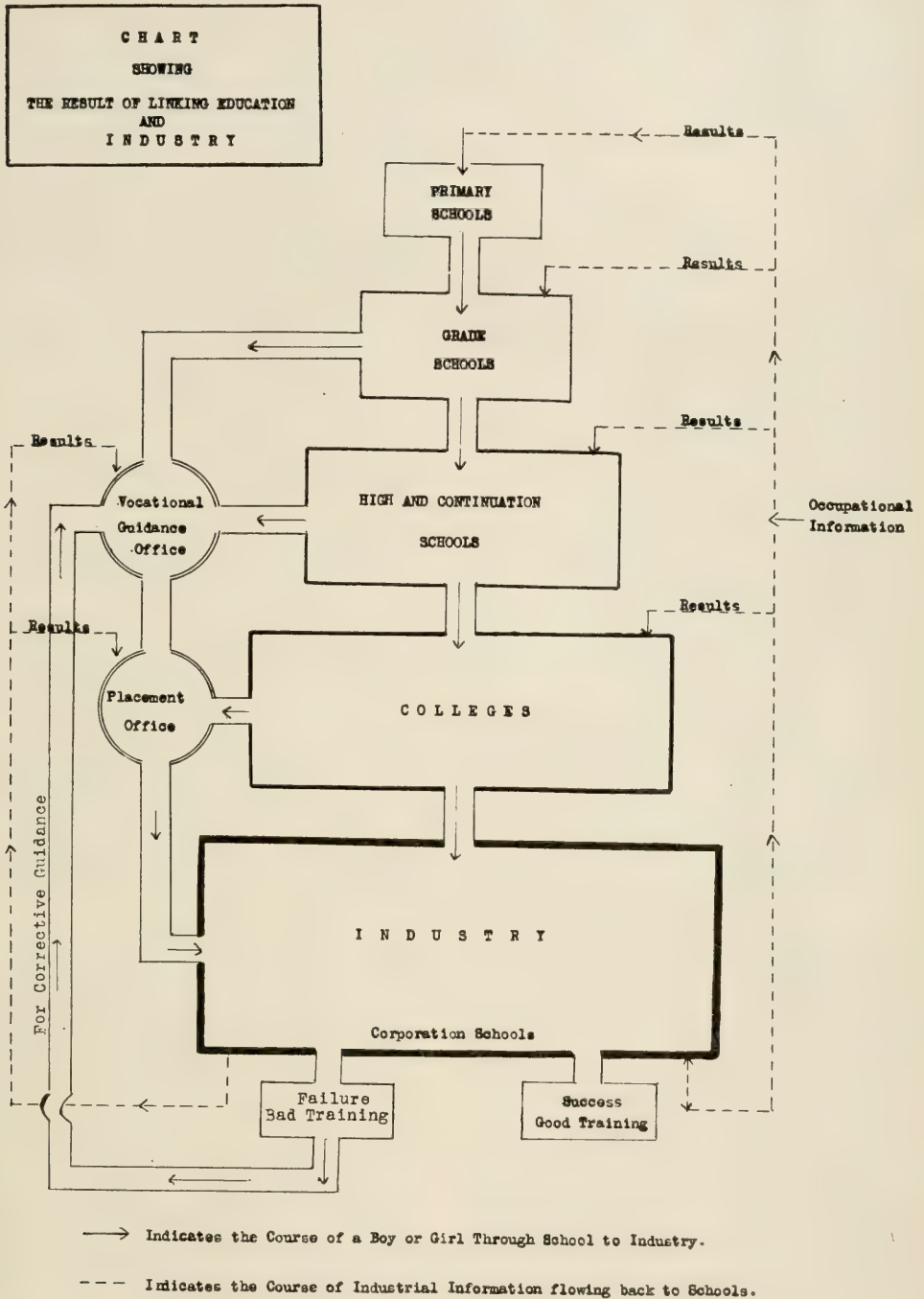
maintenance of a number of local centers, in which the best known methods of junior guidance and placement may be observed and studied. The list of cities in which such centers are being developed, in nearly every case in direct connection with the public schools, is as follows: Detroit, Pittsburgh, Seattle, Salt Lake City, Minneapolis, Saint Paul, Milwaukee, Berrien County (Mich.), Gary, South Bend, Richmond (Ind.), Cleveland, Atlanta, New York City, Worcester (Mass.), Providence, Washington (D. C.), Newark, (N. J.), Terre Haute, Evansville, Peoria.

In several cases negotiations are still pending, and plans are not yet actually in operation. The cities have been chosen with a view to representing various sections of the country. Considerable variety in size, industrial conditions, and guidance problems are presented.

The assistance rendered to these local centers by the national office takes two forms:

(1) Leadership, thru bringing together those who need help and those who are qualified by experience to offer practical suggestions. The national office is organizing as a clearing-house for information on vocational guidance; it is in a position to show what plans have been successful and what methods have not, and to offer suggestions to cooperating agencies.

(2) Financial aid, in various ways: (a) By making available the use of the government franking privilege in carrying on the necessary correspondence and research work. In one city alone this privilege amounted to a subsidy of about \$4,500 per year. (b) By the loan of office equipment. The U. S. Employment Office has considerable equipment in storage in a number of cities, remaining from operations conducted during the war. (c) By supplementing the salary schedules of the cooperating school systems, and thus making possible the em-



This chart suggests in a striking manner the possible influence upon both education and industry resulting from proper cooperation and coordination. The main pathway to industry should lead directly thru the schools; but many pupils are, and will be, diverted from the schools at various stages. These latter should enter industry only thru some suitable guidance and placement agency, which would doubtless return many to school. Information about industry would be carried back to the guidance office, as well as to the schools. (Reproduced by permission from *Junior Wage Earners*, by Mrs. Anna Y. Reed, Macmillan, 1920).



ployment of superior personnel. (d) By assisting in paying the rental for suitable quarters for the central offices in the cities when necessary.

Further development will be awaited with great interest.

#### BUREAU OF EDUCATION CONFERENCE OF SPECIALISTS

ONE of the most delightful, as well as professionally profitable, features of my connection with the Bureau of Education is the privilege I have had each year of representing the Commissioner at the annual conference of specialists engaged in the preparation of teachers. I have just completed the finishing touches on the program for the eleventh annual meeting of the series, the sixth under the auspices of the Bureau of Education, which is to be held, in cooperation with Indiana State University, at Indianapolis, on December 9, 10, and 11.

Membership in the conference is limited to representatives of institutions in the Mississippi Valley states who occupy responsible positions in the work of training teachers of the manual arts and industrial education. It is a small, select group of able men, meeting together for three consecutive days of earnest study and consultation. To meet with them is a most stimulating experience, and a privilege highly prized by those who are eligible to attend.

Each year since the organization of the Federal Board for Vocational Education, the Board has cooperated by sending a representative, who has been the principal speaker at one of the sessions. This year the Department of Labor is also cooperating in the same manner. For two years past we have had similar cooperation from the War Department, and I am expecting to have a speaker detailed again this year.

The program provides seven sessions,

with a single topic for discussion at each session. The topics arranged for the 1920 conference include: Occupational analysis as a basis for determining the content of trade courses; Progress report of the committee on "The itinerant teacher of manual arts in rural and village schools;" Progress in the development of plans for training teachers of industrial subjects; The need of more vital contacts between the school and industry; The program of the Junior Employment Service; Problems of manual arts teaching in the intermediate school or junior high school; Special problems of the teacher in part-time classes; Occupational training work in the United States Army.

#### IMPROVING CONDITIONS IN THE FEDERAL CIVIL SERVICE

IN MY October letter I reproduced two charts and two tables, analyzing the expenditures of the Federal government, taken from the report of an address by Dr. E. B. Rosa, chief physicist of the United States Bureau of Standards, before the Washington Academy of Sciences. The facts brought out by Dr. Rosa have evidently made a strong impression in influential quarters.

Dr. Rosa was subsequently invited to appear again before the Academy, which he did on Saturday evening, October 23d, in an address on "A reorganized civil service." In this address he outlined a program of eight improvements in conditions and procedure in connection with the Federal civil service. These suggestions are, in brief, as follows:

A system of standardized positions with more adequate salaries, and provision for revising it and keeping it up to date.

An enlarged and strengthened Civil Service Commission.

An advisory council to the Commission, consisting of representatives of the administrative officials and subordinate employees.

Civil service extension agents, or liaison officers,

detailed to the various Departments by the Civil Service Commission.

Personnel committees in all the various bureaus and departments.

Employees' committees, and systematic provision for hearing and dealing with complaints.

Efficiency ratings of employes, and promotions based on the same.

Removal of restrictions on transfers of employes from department to department, and provision of a transfer register at the office of the Civil Service Commission, to facilitate the transfer and promotion of deserving and able employes.

Radical differences of opinion have appeared, naturally, among both administrative officials and subordinate employes, with respect to the numerous proposals which have been put forward during the past year or two, including some of these suggestions of Dr. Rosa. These differences have been so sharp, and so apparently irreconcilable, that I have not been optimistic over the prospect of early action by Congress in the direction of ameliorating the admittedly precarious status of government employes.

Certain developments have taken place within the last few weeks, however, which make the situation look somewhat more hopeful. I believe that within a short time after the opening of the final short session in December we shall know definitely whether to expect favorable action by this Congress.

#### THE GOVERNMENT AND EDUCATION

THE charts and tables in my October letter showed that during the year ended June 30, 1920, of the total expenditures of the Federal government approximately 93 per cent were incurred on account of war and the national defense, while only 1.01 per cent were incurred on account of "research, education and development," including the Department of Agriculture, Geological Survey, Public Health Service, Library of Congress, and other agencies. The aggregate amount spent on "education,"

including the Bureau of Education, Howard University, Federal Board for Vocational Education, and the subsidies to the State Colleges of Agriculture and Mechanic Arts, was approximately \$5,940,000, or about .0014 of the total government expenditures.

One very interesting letter has come to the editorial desk, protesting against the publication of these figures as misleading, and calling attention to the obvious fact that there are other sources of revenue for the support of public education, such as state and municipal appropriations. It may be that others also missed the two points I was trying to make.

Two points struck me forcibly when I saw these tables and charts, and I happen to know that they impressed many others in the same way. The two points are in no way related, except that they are emphasized by the same set of figures. First, notwithstanding the war is over and we are nominally on a peace basis, most of our unprecedented current government expenditures are on account of war and the national defense; second, the government is spending on education and scientific research an amount so small as to be almost negligible.

Now, I do not believe at all in control or direction of public education by the Federal government, nor in a centralized public school system. But I do believe in more liberal support for a government "educational service" agency. There is no doubt in my mind that education is a proper concern of the Federal government. Believing this, I do not see how any one can contend that this concern is properly or adequately recognized in expenditures aggregating no more than fourteen-one-hundredths of one per cent of the total Federal budget.

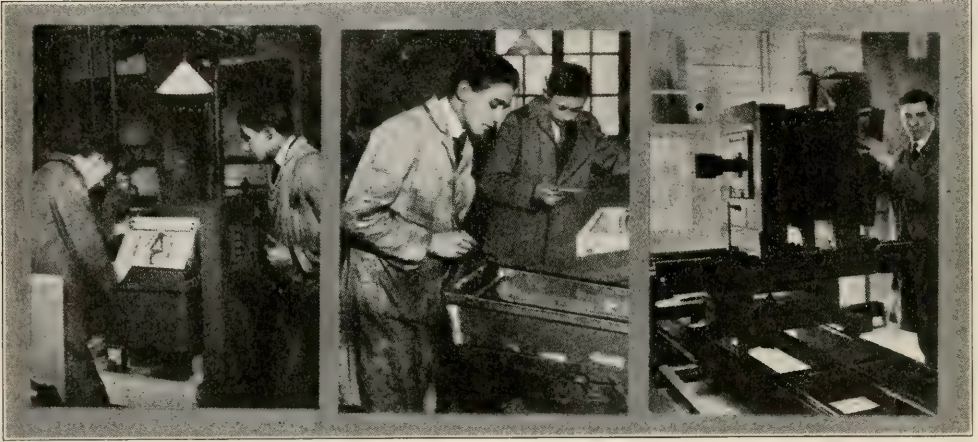
—WILLIAM T. BOWDEN.

## IN FOREIGN COUNTRIES

### A SCHOOL OF PHOTO-ENGRAVING

THE Educational Committee of the London County Council is showing a special interest in the welfare of untrained ex-officers who served in the war. Among

The broad issues examined by the unofficial Village Education Commission were discussed last week, and we may now indicate the bearing and purpose of one of the cardinal proposals, the establishment of a new type of middle school for rural areas.



ETCHING BLOCK MACHINE

ETCHING OF HALF-TONE

MAKING HALF-TONE NEGATIVES

the opportunities offered these men is a course in photo-engraving. A school for teaching the science and processes of this craft has been open in a modern building on the site of Dr. Johnson's residence. Here the ex-officers may pursue a three-year course, at the end of which they will be well equipped for employment in responsible positions. It is said to be the only modern school of this sort in England. The accompanying illustrations are from an article on this school published in *The Graphic*.

### VOCATIONAL MIDDLE SCHOOLS IN INDIA

THE following article from the London *Times Educational Supplement* reveals a discussion of vocational education now going on in India that will, we believe, interest our readers. We, therefore, give it in full.

The middle school familiar in India to-day is of two kinds—the middle vernacular school, in which English is not taught, and which in reality is rather a continuation school than the lower section of a secondary institution, since it leads on to no higher standard; and the middle English school, which contains the first two, three, or four stages of a secondary course of instruction. As a high school may contain middle classes, so a middle school may contain primary classes. Secondary English schools, whether middle or high, continue the teaching of the vernacular, and hence are called Anglo-vernacular schools. To quote the last Quinquennial Review:—

"As regard their character, their intention, and their effect, they [middle vernacular schools] belong to the primary school system. They are situated in large villages and ordinarily contain all the primary classes and two or three middle classes, carrying on the education of those who desire it to a pitch which will enable them to appreciate the literature of the vernacular and imbibe a more advanced knowledge of geography and history than the primary school can afford."

A cheap and facile sneer at missionary effort is that converts are influenced by the prospect of improving their material position. So far from hiding



this consideration, Mr. Fraser and his colleagues bring it into the forefront of their proposals for vocational education. They observe that one element in the desire with which the villager in the mass movement area turns to the Christian Church is a vague longing for economic improvement as a means of escape from the degradation of his present environment. The great need of the people is industrial training—"partly for the development of their country, but far more urgently for their own self-development."

The outstanding facts calling for a new type of missionary middle school are that in mass movement areas an educational problem of great magnitude has been created; that the majority of Christians, belonging largely as they do to the low castes and the out castes, need the impact of something more than a literary education if they are to gain independence; that the increasing demand of the industrial towns for labor calls for supply; and that the economic evils and exploitation of the villages call for investigation and effort. To meet these conditions the Commission propose a simple, clearly conceived middle school giving both literary and industrial training. The school should eventually supersede for rural areas all education of the type at present existing between the primary school and the high school.

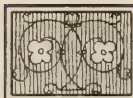
Such a school should be provided for every rural area that can supply sufficient pupils. In present economic and social conditions the Commission do not see any practicable alternative to the boarding system for the vocational middle schools, great care being taken to preserve the features of Indian home life. A child of average intelligence who has been fairly regular at the village school should be ready for the vocational institution at the age of  $10\frac{1}{2}$  or 11, and should complete the course at about 16 years of age. The vernacular will be the medium of instruction, and in all classes industrial work—the periods graded to the age and physical development of the pupils—will form an important part of the curriculum. English should be taught as a second language by the direct method, the wish being for the pupils to become rather English-understanding than English-speaking. The literary course should include subjects preparing for community service.

The industries to be introduced will naturally vary according to the locality; they should generally be related to the indigenous products and to the hereditary proclivities of the locality. There should

be a ready market for the product, so that a constant and sufficient amount of work may pass thru the school workshops. There should be a sufficient labor market to absorb the pupils when trained. For want of attention to the last-mentioned principle the Commission found that very many pupils make their livelihood on leaving school in some quite different occupation to that in which they have been trained. They found that vocational schools seem to flourish best when they are many-sided, especially if they have developed organically, new industries being added as the old ones became established and remunerative. Thus agriculture may lead to smithing or to farmyard carpentry, or weaving lead to spinning, dyeing, and finishing.

The feeling of those who have already been engaged in industrial schools is that work should be carried on as nearly as possible under trade conditions. But the Commission think otherwise, on the ground that the sacrifice of the pupil thru the division of labor so common under these conditions is absolutely uneducational. In one mission station where a considerable chair-making industry had been built up, and where the boys were thoroly industrious and well supervised, the whole scheme was vitiated by this error. The work was compartmented, and no one boy could make the whole chair. Produce should not be sold under current market rates, and there should be no cause for the complaints sometimes heard that the children's work is exploited. Nor is the proposed vocational school to be the closing of the door to further opportunities. It is shown that the most promising pupils could be promoted to industrial and agricultural schools and colleges, or to normal training, or to mission high schools to be prepared for service among their people.

In a recent address before the Rural Teachers' Conference at Balliol College, Oxford, Mr. H. A. L. Fisher, president of the English Board of Education, said that he did not think the country, as a whole, had, until recent years, taken its schools seriously enough. There has been too great a tendency to regard education as a form of measles, to be got over in early childhood. He maintained that education is a process which must be continued thru life.



# PROJECTS, PROBLEMS AND NOTES



THIS is the month when many teachers are thinking of tests and examinations of some kind. For some it is the end of the fall term, and for others it is a time to take account of stock, as it were, in order to make energy count for the most during the finishing weeks of the semester. To all such we modestly offer the tests worked out last year by the *Manual Training Magazine* and distributed to subscribers of the *Work Sheets*. The tests received sufficient commendation at that time to justify bringing them to the attention of the larger body of workers.

## WOODWORKING TESTS

TESTS Nos. 1 and 2 are intended for pupils in the sixth or seventh grade, who have been pursuing a course in elementary carpentry in which laying-out and sawing are the principal operations taught. Tests Nos. 3 and 4 are for pupils in the eighth grade or first year high school, who have recently begun the use of the plane in a course in elementary cabinet making.

### WOODWORKING TEST No. 1

(Write the appropriate words in the spaces indicated by dotted lines.)

(a) In laying out work or testing angles with the try-square, the good workman always keeps the ..... of the try-square against the ..... side or the ..... edge of the work.

(b) A saw for cutting across the grain of wood is called a ..... saw; a saw for cutting lengthwise the grain of the wood is called a ..... saw. The teeth of the first are shaped like this: (Sketch of teeth.) The teeth of the second one are shaped like this: (Sketch of teeth.)

(c) If we saw a log of wood in two, the part sawn looks like this: (Sketch of end of log.)

The wood nearest the bark is called the.....

that nearer the center is called the.....

(d) The names of four of the most important parts of the jack-plane are

(1)..... (2).....  
(3)..... (4).....

Fill out the following form:—

Test begun.....Finished.....

Time consumed.....

Name.....Age.....

City or Town.....State.....

### WOODWORKING TEST No. 2

*Lay out and saw out a Greek Cross.*

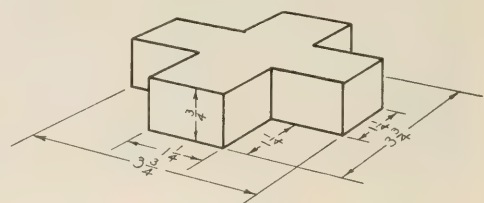


FIG. 1

### WORKING DIRECTIONS.

(a) You are supposed to have a machine-planed board  $\frac{3}{4}$ " or more thick, 4" or more wide and 12" or more in length. From one end of the board you are to cut the Greek cross. Select one side of the board for a face side and mark it in the usual way.

(b) Select a straight edge for a joint edge, (If the boards are given out with rough edges, plane a joint edge) and mark it.

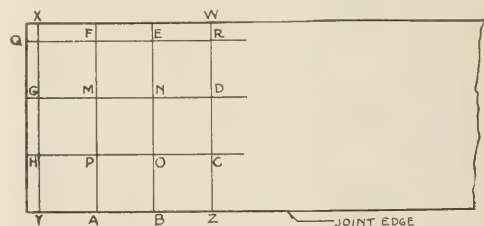


FIG. 2

(c) Using a sharp pencil, a rule and a try-square, lay out the form of the Greek cross on the face side of your board, using the joint edge for the end of one arm of the cross, Fig. 2, and allowing space for squaring up the end of the board.

(d) In sawing, the kerf should be on the outside of the line so as to leave the cross with full dimensions, but no longer. Saw lines in the following order (1) Y to X, (2) Q to R, (3) G to M, (4) H to P, (5) A to P, (6) B to O, (7) F to M, (8) E to N, (9) Z to W, (10) C to O, (11) D to N. The degree of success depends not only upon following the layout lines accurately but also upon starting and stopping carefully, and especially upon holding the saw so that all cuts will be square with the face of the board. The teacher will test the finished cross with the try-square as well as with the rule.

(e) On the face side of the cross write with a pencil giving the information indicated in the form below:

Test begun..... Finished.....  
Time consumed.....  
Name..... Age.....  
City or Town..... State.....

### WOODWORKING TEST No. 3

(Write the appropriate words in the spaces indicated by dotted line.)

(a) The names of four of the most important parts of the jack-plane are

(1)..... (2).....  
(3)..... (4).....

(b) In planing the edge of a board we bear down harder with the..... hand at the beginning of the stroke, and harder with the..... hand at the end of the stroke.

(c) The steps to be taken in squaring up a piece of mill-planed stock to dimensions are:

(Tell just how you did it.)

.....  
.....  
.....  
.....

(d) The names of the four important parts of a marking gage are

(1)..... (2).....  
(3)..... (4).....

(e) The usual way to sharpen a chisel is to whet it on an..... which consists of rubbing it forward and backward, taking care to hold it at the same..... during the process.

(f) The most noticeable differences between a pine tree and an oak tree are:

(Shape).....

(Color).....

(Leaves).....

(Fruit).....

(g) The most noticeable differences between a white pine board and a white oak board are:

(Weight).....

(Grain).....

(Hardness).....

Fill out the following form:—

Test begun..... Finished.....

Time consumed.....

Name..... Age.....

City or Town..... State.....

### WOODWORKING TEST No. 4

*Make a swing board or a hat rack (the teacher will indicate which.)*

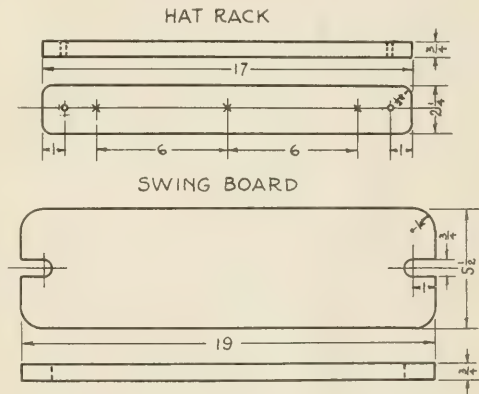


FIG. 3

This problem is intended to test (1) the skill in planing a board square and to dimensions; (2) ability to round a corner neatly—to keep the rounded surface square with the face side of the board; and (3) carefulness in boring holes.

### WORKING DIRECTIONS

(a) For this problem, a board is needed that will plane to the dimensions given in the drawing, Fig. 3. The first and most important part of the problem is to plane the board square and to dimensions, following the order you have been taught.

(b) Lay out the corner curves and round the corners.

(c) If the hat rack, lay out and bore holes for hooks and for screws to hold up the rack. If the swing board, lay out and cut holes for the rope.

(d) On the face side of the piece, write with a pencil giving the information indicated in the form below:



Test begun.....Finished.....  
Time consumed.....  
Name.....Age.....  
School.....Grade.....  
City or Town.....State.....

MECHANICAL DRAWING TESTS

THE five tests in mechanical drawing are intended to be given in a series—one immediately after the other, as though they constituted a scale. While the series obviously does not cover all the important elements in elementary mechanical drawing, it does include many of the most vital ones from the standpoint of practical drafting. Already these texts have been given a sufficient number of times to enable one to state with confidence that, if given as intended, they will reveal to any teacher certain defects and sometimes also excellencies in his work which will greatly assist him in determining the kind of instruction to give during the remainder of the year. He is likely to discover that certain habits that he supposed had been formed in the use of instruments and in methods of procedure have not been formed at all, and that what the students need is more experience in making very simple but interesting drawings that involve the fundamentals of good technic. The Editors would be glad to learn the results of the farther use of this series of tests.

MECHANICAL DRAWING TEST No. 1

*Draw a rectangle in the center of a sheet of paper.*

WORKING DIRECTIONS

- (Be sure to read all the directions before beginning to draw.)
- (a) Locate and draw a rectangle 5"x8" in the center of your sheet, Fig. 1.
  - (b) First draw light lines with a 2-H or a 4-H pencil; then line in the rectangle with an H or other medium pencil, making a rather dark, even line.
  - (c) Place a figure near each line to indicate the order in which the lines were drawn.
  - (d) Do not erase anything. *No eraser is to be used on the sheet*—not even to correct a mistake.

If you draw a line in the wrong place, let it remain there; then draw one in the right place.

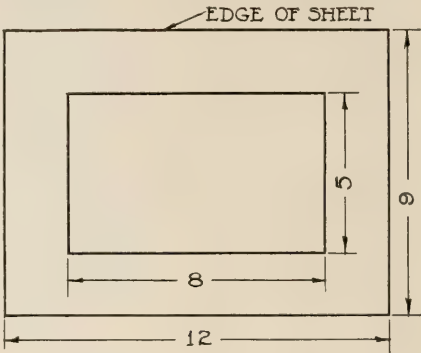


FIG. 1

- (e) No dimensions are to be placed on the finished sheet.
- (f) Record the time of beginning and finishing the problem and figure out the time consumed in working the problem.
- (g) On the back of the sheet give the information indicated in the form below:  
Sheet begun.....Finished.....  
Time consumed.....  
Name.....Age.....  
School.....Grade.....  
City or Town.....State.....

MECHANICAL DRAWING TEST No. 2

*Lay out the border lines of a sheet and draw two views of a block*

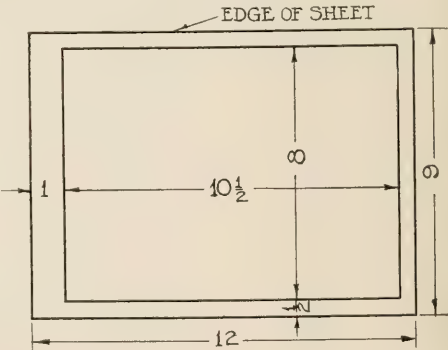


FIG. 2

WORKING DIRECTIONS

- (Be sure to read the directions before beginning to draw.)
- (a) In locating the border lines as indicated in Fig. 2, make horizontal measurements from the left hand edge of the sheet, and vertical measurements from the bottom edge of the sheet. (In case the

sheet is not exactly 9" by 12", as indicated in the sketch, do not worry if the space between the upper border line and the top edge of the sheet or between the right-hand border and the right-hand end of the sheet is not exactly  $\frac{1}{2}$ "; follow directions.)

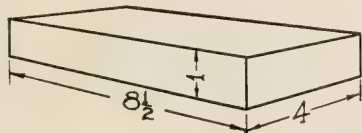


FIG. 3

(b) Draw light lines thru these points indefinite in length with a 2-H or 4-H pencil.

(c) Inside the border lines make layout of top and front views of the block shown in Fig. 3. The

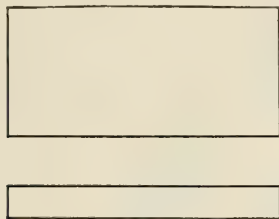


FIG. 4

top view should be placed above the front view as shown in Fig. 4. These two views should occupy the center of the sheet, with the space between them  $\frac{3}{4}$ ".

(d) Line in with a medium pencil.

(e) Use no eraser on the sheet.

(f) On the back of the sheet give the information indicated in the form below:

Sheet begun..... Finished.....  
 Time consumed.....  
 Name..... Age.....  
 School..... Grade.....  
 City or Town..... State.....

#### MECHANICAL DRAWING TEST No. 3

*Lay out the border lines of the sheet and draw two views of a rabbeted block.*

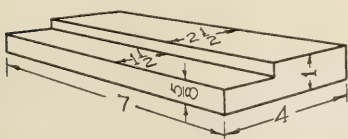


FIG. 5

#### WORKING DIRECTIONS

(Be sure to read the directions before beginning to draw.)

(a) Your sheet is supposed to be 9"x12". Draw border lines 8"x10 1/2", placing the left one 1" from the left edge of the sheet, and the bottom one 1/2" up from the bottom of the sheet.

(b) Inside the border lines make a lay-out of the top and end views of the rabbeted block shown in Figs. 5 and 6. Locate them so as to look well on the sheet.

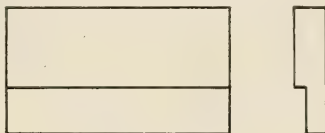


FIG. 6

(c) Line in with a medium pencil.

(d) Use no eraser on the sheet.

(e) On the back of the sheet give the information in the form below:

Sheet begun..... Finished.....  
 Time consumed.....  
 Name..... Age.....  
 School..... Grade.....  
 City or Town..... State.....

#### MECHANICAL DRAWING TEST No. 4

*Lay out the border lines of the sheet and draw three views of the block with lug.*

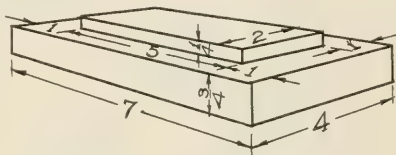


FIG. 7

#### WORKING DIRECTIONS

(Be sure to read the directions before beginning to draw.)

(a) Your sheet is supposed to be 9"x12". Draw border lines 8"x10 1/2", placing the left one 1" from the left edge of the sheet and the bottom one 1/2" from the bottom of the sheet.

(b) Inside the border line, make the top, front, and end views of the block with a lug on the top, shown in Fig. 7. Space the views on the sheet so that they will look well.

- (c) Line in with a medium pencil.  
 (d) Use no eraser on the sheet.  
 (e) On the back of the sheet give the information indicated in the form below:
- Sheet begun.....Finished.....  
 Time consumed.....  
 Name.....Age.....  
 School.....Grade.....  
 City or Town.....State.....

#### MECHANICAL DRAWING TEST No. 5

*Lay out the border lines of the sheet and draw three views of the hollow block*

#### WORKING DIRECTIONS

(Be sure to read the directions before beginning to draw.)

(a) Your sheet is supposed to be 9"x12". Draw border line 8"x10½", placing the left one 1" from the left edge of the sheet and the bottom one ½" from the bottom of the sheet.

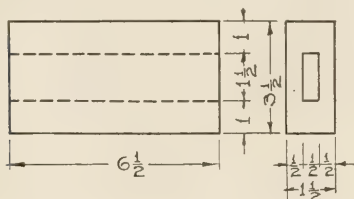


FIG. 8

(b) Inside the border line make the top, front and end views of the hollow block shown in Fig. 8. Space the views on the sheet so that they will look well.

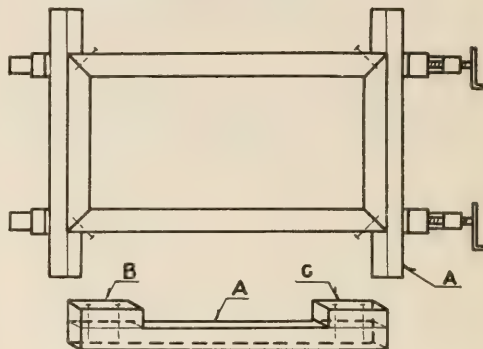
- (c) Line in with a medium pencil.  
 (d) Use no eraser on the sheet.  
 (e) On the back of the sheet give the information indicated in the form below:
- Sheet begun.....Finished.....  
 Time consumed.....  
 Name.....Age.....  
 School.....Grade.....  
 City or Town.....State.....

#### ROCKING CLOWN

**T**HIS toy has just come from E. F. Juergens, supervisor of manual training, Middletown, Ohio. Its construction is so simple that it hardly needs any description. The clown should be made of one piece of thin wood and the rocker of

thicker wood. Mr. Juergens says, "The base must be made wide enough to have the toy stand and rock." He would make the rocker about 1" thick. The rocker is fastened to the legs of the clown by means of two screws.

#### PICTURE FRAME CLAMP



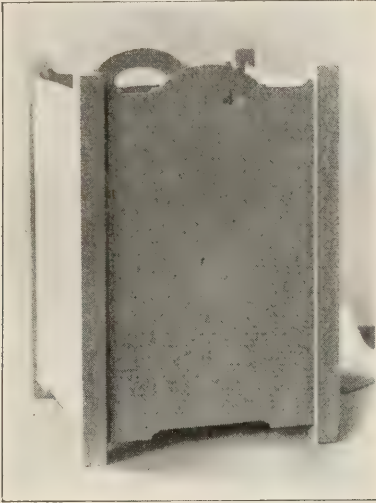
A MITERED FRAME CLAMPING DEVICE

**L**AST April we received a letter from I. S. Turner, teacher of manual training at Centralia, Washington, in which he referred to the device for clamping up a mitered frame shown on page 154 in our December, 1919, number. Mr. Turner said that he had something for the purpose which was "more easily constructed and equally efficient," using less material. He said he had used it successfully for the past two years in his school work. This device is shown in the accompanying drawing. It consists merely of two notched sticks, like A, made out of scrap material. These may be constructed by nailing blocks on a straight piece as shown by the dotted lines. A point of particular importance in fastening on these blocks is that the distance from B to C must be exactly the length of one side of the frame. After these notched sticks are made, two clamps completes the outfit. It should be especially noticed that this device leaves



ROCKINGCLOWN

room for strengthening the joint by means of a nail or screw before the frame is removed from the clamping device.



WASTE BASKET

### THREE-PANEL SCREEN

THIS three-panel screen is one which does not require a great deal of skill to make, and could be used as an eighth-grade project. We have the Stanley Rod and Dowel machine, and this machine makes the dowel rods. The cloth is made the correct length, and slipped on the dowel rods, after which the side is screwed on. This screen allows for a large variety in methods and fastening of cloth

### MILL BILL

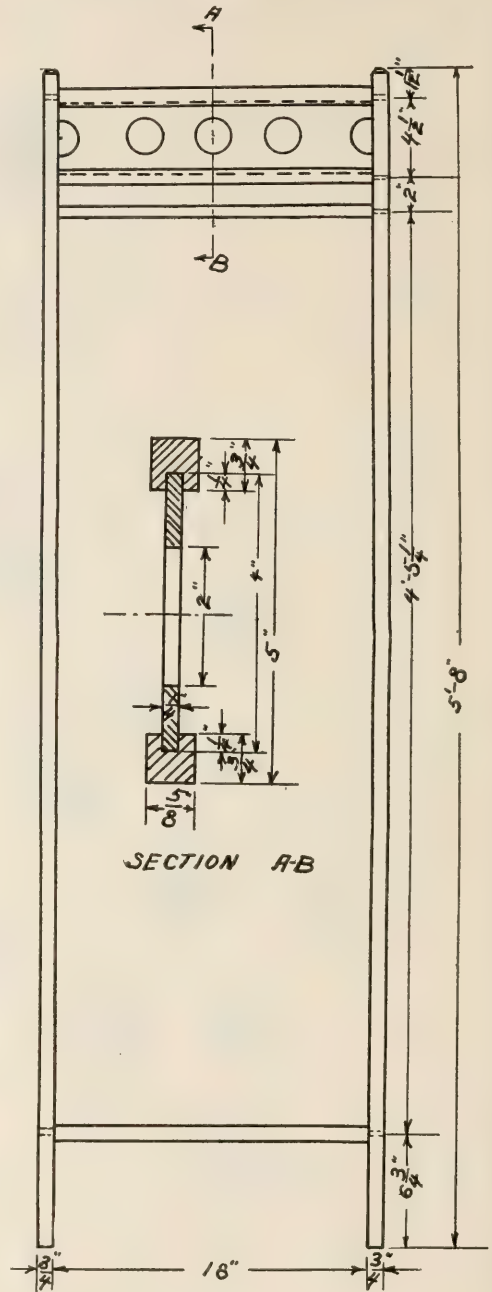
- 6 pcs.  $3\frac{1}{4}$ "x $5\frac{1}{8}$ "x68"
- 6 pcs.  $3\frac{1}{4}$ "x $5\frac{1}{8}$ "x18"
- 6 pcs. Dowel Rod  $5\frac{1}{8}$ "x18"
- 3 pcs.  $\frac{1}{4}$ "x4"x18"
- Two pair  $1\frac{1}{2}$ " hinges
- 24  $1\frac{1}{2}$ " F. H. B. screws

—E. F. JUERGENS, High School,  
Middletown, Ohio.

### A WASTE BASKET

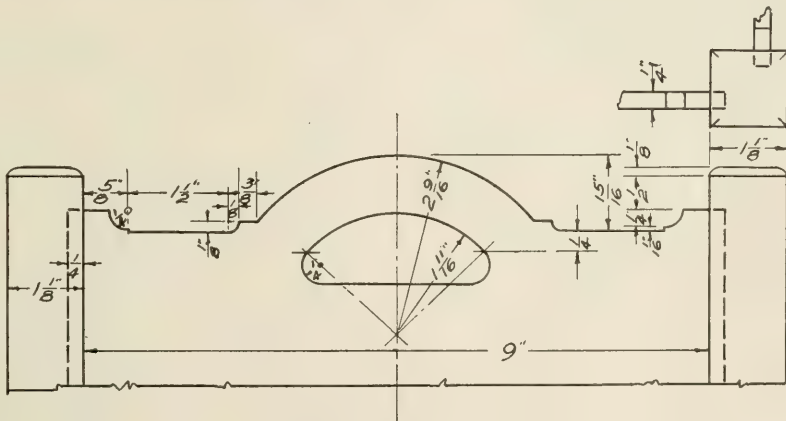
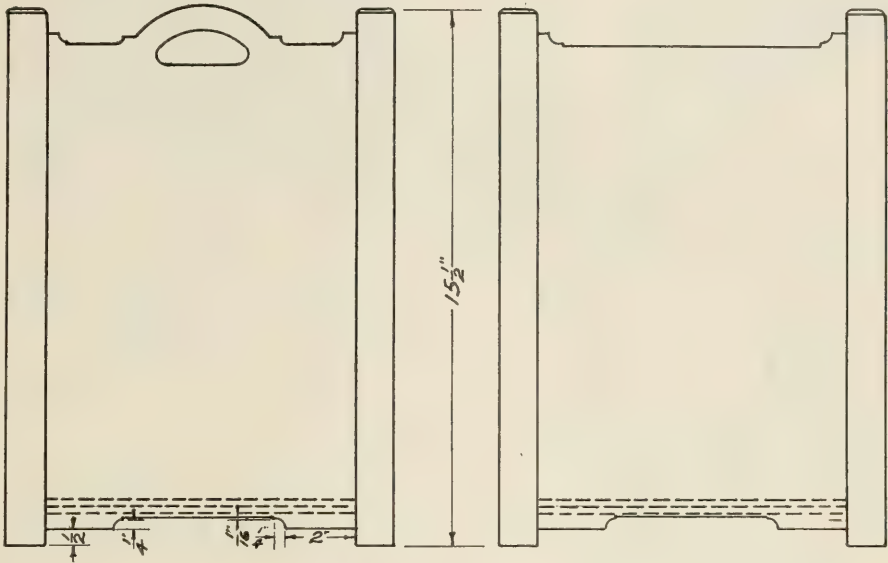
THE accompanying drawing and photograph illustrate a waste basket which has proved to be an interesting and successful problem for both eighth grade and high school boys. It furnishes

### THREE - PANEL SCREEN



a splendid opportunity for close work in laying out from a drawing—a thing which most high school boys are badly in need of. It also calls for exact work with the coping saw and the file.

# WASTE BASKET



## DETAIL OF LAYOUT

The grooves in the posts are easily made by first cutting out the whole length of the piece with the universal plane and then gluing in pieces at the ends, leaving the opening as required by the length of the side. The photograph shows a basket finished in ivory enamel, but of course, each boy would be

encouraged to put on the kind of finish that would match the rest of the furniture in the room in which the basket is to be placed.

E. E. ERICSON,  
Supervisor of Manual Training,  
Okmulgee, Oklahoma.



## CURRENT PUBLICATIONS

*Blue Print Reading.* By E. M. Wyatt, Supervisor of Manual Training, Houston, Texas. The Bruce Publishing Co., 1920. Size 6 x 9 in., oblong; 86 pages; price \$1.00.

This is a textbook in a new field that has been developing during the past few years. It is the result of several years of experience in teaching the subject in evening classes. As stated by the author, the book is "designed to suit as wide a range of trades as possible. Usually each new principle is illustrated by both a machine and an architectural example." At the end of each chapter a list of questions and problems are given.

The organization plan of the book may be seen from the following chapter headings: Introduction, Kinds of Drawings, The Theory of Orthographic Projection, Meaning of Various Kinds of Lines, Forshortened Lines, Inclined Surfaces, Auxiliary Projections, Scale Drawing, Dimensions, Breaks, Representing Drawings as Broken, Sections, Bolts, Screw Threads, Machining or Finish, Rivets, Structural Steel, Architectural Conventions, Study of a Set of House Plans, Study of the Bench Grinder.

*Experimental Wireless Stations.* By Philip E. Edelman. The Norman W. Henley Publishing Co., New York, 1920. Size, 7¼ by 5½ in.; 392 pages; price, \$3.00.

This is a revised, enlarged and reset edition of a book first published in 1912. It treats of the theory, design, construction and operation of wireless communication, both telegraphic and telephonic. It includes a standard design for so-called "amateur stations." It ought to be a real help to the many boys and young men who have become, as it were, auxiliary to the Government Service and are taking up this fascinating work, feeling that they are making themselves ready for patriotic service later.

*Household Arts for Home and School.* By Anna M. Cooley and Wilhelmina H. Spohr. The Macmillan Company, New York, 1920. Size, 5 1-2x7 1-4 in.; 433 pages with 223 illustrations; price \$1.50.

This book is for use in city elementary and junior high schools and at home. The book treats of the furnishings of a simple home thru the story of the Sunnyside apartment, the practice house at the Ellen H. Richards School for girls studying household arts. The book treats also of the economical buying and care of clothing, the use of commercial patterns, and the making of simple garments. The book is attractively illustrated, several of the pages being printed in colors.

## RECEIVED

*Getting Out the High School Paper.* By Clara C. Ewalt. One of a series of bulletins on what Cleveland's public schools are doing. Issued by Board of Education, Cleveland, O.

*Eastern Arts Association.* Proceedings of the 11th annual meeting held at Boston, April 1, 2 and 3, 1920. Florence O. Bean, 218 Tremont St., Boston, Mass., chairman of Editorial Board.

*Correspondence Study in Universities and Colleges.* By Arthur J. Klein. Bulletin No. 10, 1920. Published by the United States Bureau of Education.

*Public School System of Memphis, Tennessee.* Part 6, Industrial Arts, Home Economics and Gardening. Bulletin No. 50, 1919. Published by United States Bureau of Education.

*The Disston Crucible.* August, 1920. This house organ published by Henry Disston & Sons, Philadelphia, contains a valuable table on the properties of various hard woods.

*Agricultural and Mechanical Colleges.* By Walton C. John. Contains facts and statistics for 1917-18. Bulletin No. 8, 1920. Issued by United States Bureau of Education.

*Trade and Industrial Education for Girls and Women.* Bulletin No. 58. Issued by Federal Board for Vocational Education, Washington, D. C.

*Bulletin of Evening Courses.* Issued by Board of Education, Toledo, Ohio. Contains descriptions of courses and illustrations showing equipment.

*Examples of Good Teaching in Industrial Education.* By William T. Bawden. This is a report of a conference of specialists in industrial education held in Chicago last February. Industrial Education Circular No. 6. Issued by the United States Bureau of Education.

*Teaching Children How to Save.* A bulletin issued by The Savings Division of the Treasury Department, Washington, D. C.

*Applied Art.* By Pedro J. Lemos, Editor of Schools Arts Magazine and Director of Stanford Museum of Fine Arts. Sample pages from a manual for teachers published by the Pacific Press Publishing Association, Mountain View Calif. The Price of the complete volume containing 420 pages is \$6.00.

*Elementary Algebra.* By J. L. Neufeld, Central High School, Philadelphia. Published by P. Blakiston's Son & Co., Philadelphia. This book aims first at clearness. It "contains an abundance of explanation."

Removable *from* its base  
for continuous work



Grooved Steel Block, shown above, holds round and irregular shapes. By actual test, holds nickel-plated bars without damaging surface.

## THE "Yankee" Vise

CUTS OUT DELAYS

When the job requires that you change from bench to drill press, milling machine and emery wheel, the "YANKEE" Vise saves time.

You don't have to true up the work for each separate operation. The "YANKEE" Vise lifts off its base—work and all!

Carry it to any machine in the shop. Use it in any position. Alignment of work remains accurate. Less chance for error.

Bottom, sides, ends, top—all machined absolutely true.

### Your Dealer Can Supply You



Here is a big help for students. Free "YANKEE" Tool Book. Pictures of all the famous "YANKEE" Tools in action. Explains why they produce better results in drilling metal, tapping, boring wood, and driving screws. Write for it TODAY.



No. 1993, with Swivel Base. Set-screw holds vise to base; cam-throw lever locks position. Body, 7 1-4 x 2 3-4 (wide) x 3 in. Hardened steel faced jaws open to 3 1-8 in.

No. 1992. Body 4 7-8 x 2 (wide) x 2 1-16. Jaws open to 1 15-16 in.

No. 1991. Body 3 5-8 x 1 1-2 (wide) x 1 1-2. Jaws open to 1 1-2 in.

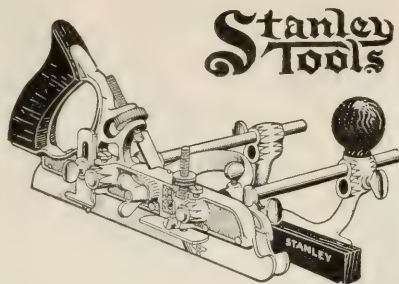
"YANKEE" Vises, without the swivel base, are obtainable in the three sizes above listed.

Your Dealer Can Supply You

NORTH BROS. MFG. CO., Philadelphia

# "YANKEE" TOOLS

*Make Better mechanics*



## STANLEY "FORTY-FIVE" PLANE

One of the handiest tools for woodworking in a Manual Training Equipment. In a compact and practical form it combines *seven planes in one*.

- 1—Beading and Center Beading Plane.
- 2—Plow.
- 3—Dado.
- 4—Rabbit and Filletster.
- 5—Match Plane.
- 6—Sash Plane.
- 7—Slitting Plane.

Twenty-one cutters are furnished with each plane, twenty-four additional cutters are regularly carried in stock.

An attractive twelve-page booklet printed in colors, explaining in detail the different uses to which Stanley "Forty-five" may be put, will be sent upon request.

**THE STANLEY RULE & LEVEL PLANT.**  
THE STANLEY WORKS  
NEW BRITAIN, CONN. U.S.A.

### FIELD NOTES—(Continued) from page 100

Professor Ira S. Griffith spoke on general industrial training for general educational purposes. Leonard V. Koos, professor of secondary education, University of Minnesota, presented his findings regarding the purposes or functions of the junior high school. Homer J. Smith, assistant professor of vocational education, University of Minnesota, spoke of the institution and trade-trained vocational teachers, their merits, failings and part each can play successfully. George M. Brace, director of vocational education, St. Paul, strongly advocated separate schools for the teaching of vocational education, such as provided for in the Smith-Hughes Law. Elizabeth Fish, principal of the Girl's Vocational High School, Minneapolis, presented the vital present-day problems of vocational education for girls.

At the manual training division meeting Dr. C. A. Prosser, vividly pointed out the value of what we term "personality" to the success of the industrial teacher. Homer J. Smith told of some of the methods and means which an industrial teacher might follow to keep abreast with the times. F. H. Thomas, principal of the St. Paul Industrial School, spoke of unit trade classes, and H. M. Brook of Central High School, Minneapolis, pointed out his experiences in carrying on Smith-Hughes work in a cosmopolitan high school. He believed that it was not necessary to have a separate school to do successful work.

J. E. Painter, supervisor of manual training, Minneapolis, was elected president of the division for the coming year, and John F. Friese, St. Cloud secretary.

There were two interesting division meetings devoted to vocational guidance, at which Supt. B. B. Jackson, Minneapolis; George M. Brace, St. Paul; Arthur F. Payne, University of Minnesota; and Supt. W. A. Zeigler, Thief River Falls, were speakers.

The second annual conference on vocational education met in two sessions during the convention. Part-time education was the main theme. Among the speakers were Dr. Prosser, Professor Griffith, Arthur E. Holder, and L. S. Hawkins of the Federal Board for Vocational Education. A helpful discussion of the proposed new part-time and evening school laws took place. With the exception of the wording in some details it met with hearty commendation.

—JOHN F. FRIESE.



# Manual Training Students Must Be Taught Efficiency

The day of tedious hand work in manual training class rooms is over. The reasons are many and obvious.

To begin with, manual training is taught primarily as a phase of practical education. And the subject taught is itself so thoroughly, so essentially, a *practical subject* that it must be *made* as practical and efficient as possible.

Used in the manual training class room, Wallace Bench Planers, Jointers and Saws teach the student the efficiency and practicality of rapid, accurate work. His training through Wallace Bench Machines must be of value, because it is based upon thoroughly scientific standards.

## Wallace Bench Planers, Jointers and Saws

The Wallace Idea is especially well adapted to the manual training class room because of the portability of the machine itself. While making a model, the student may take the machine right to his bench; when completed, the machine is ready to be taken right to another student's bench. Thus, one Wallace Bench Machine may serve a dozen students.

Because they operate from a simple electric light bulb, no expensive installation is necessary. Because of their patented protective guards, they insure absolute safety to the beginner at all times.

Furthermore, a boy trained with a Wallace Bench Machine is more likely to make practical use of his knowledge as a business in after years, for he can readily see how efficiency can be turned into dollars. He may not care to become a carpenter, while a wood-worker's profession may hold a decided appeal for him.

*Send for your Copy of our  
Catalog Today*



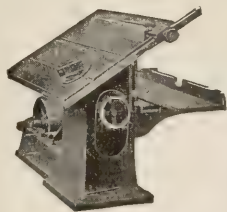
The Wallace Idea is saving wood-working plants 50% on labor overhead because it saves time wasted in walking back and forth from bench to machine, because it does away with tedious hand-work, because of its easy portability from job to job and because of its economy of operation. In a manual training class-room, it makes instruction easier and quicker, and thus allows the formation of more classes per year.

Wallace Bench Machines are used in hundreds of public schools, high schools and colleges where manual training is taught. We will gladly refer you to the superintendent of any school which has adopted the Wallace Idea.

**J.D.WALLACE & CO.**  
**1419 W. Jackson Blvd.**  
**CHICAGO, ILLINOIS**

Boston	Detroit
New York	Louisville, Ky.
Philadelphia	Knoxville
Buffalo	St. Louis
Pittsburg	San Francisco
Middletown, Ohio	

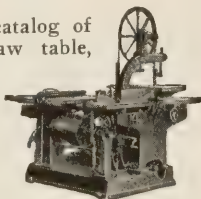




## Crescent Wood Working Machines

are the tools your students will eventually use so give them the opportunity now of learning about this splendid line of wood working machinery.

Send today for our catalog of band saws, jointers, saw table, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinders, borers, hollow chisel mortisers, Universal wood workers.



**The Crescent Machine Co.**

46 CHERRY ST.

LEETONIA, OHIO

## IMMEDIATE DELIVERY ON



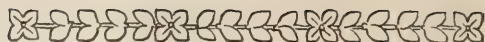
## Drawing Instrument Sets

WRITE FOR CATALOG AND  
PRICE LIST TODAY.

DO NOT DELAY YOUR ORDERS—  
SUPPLY LIMITED.

**FREDERICK POST COMPANY**

Dependable Supplies for  
Engineers, Architects and Schools.  
**CHICAGO**



FIELD NOTES—(Continued)

### THE COMING MEETING IN MINNEAPOLIS

**I**t is often more than implied by business men that school men are not good promoters of their own enterprises, but the following is evidence that, on occasion, *some* schoolmen can be good promoters. Perhaps it is an illustration of what vocational education will do for a schoolman when it gets a good chance, or perhaps it is merely the inevitable expression of a live organization that believes in itself and the work it is doing.

"The coming meeting of the Vocational Education Association of the Middle West which is to be held at Minneapolis on February 10, 11 and 12th 1921 promises to be one filled with a number of surprises for those in attendance. The Board of Directors held a meeting recently in the City Club, Chicago, at which time reports were presented by the various committees handling the details connected with the convention. The Local committee of Minneapolis was represented, and the length to which Minneapolis and the state of Minnesota was going to make the meeting a success brought smiles of appreciation and gasps of amazement to everyone. For instance, the Curtis Hotel which is to be headquarters will assume responsibility for accommodations to the limit of its capacity, after which the nearest available rooms at the price specified will be reserved. Thus no worry need be experienced by anyone setting out to attend the meeting as to any annoyance in this respect. The local committee also have many surprises "up their sleeve" in the way of entertaining as well as educating the delegates. Just to mention a few, there are the huge flour mills with their output of a barrel of flour per second, the beautiful state capitol at St. Paul, the Symphony Orchestra, and the many public and private schools devoted to vocational education. A visit to the twin cities without the great meeting scheduled would be an education in itself. It would be well to plan for a few extra days.

"In regard to the program it also developed that a hearty response had already been received from the advocates of vocational education in Canada. It will be an eye-opener to many of the visitors from the states to meet the fur-clad denizens from Saskatoon and Alberta, Calgary and Medicine Hat and hear them talk glibly of spending \$500,000 for a new high school and the various methods of teaching agriculture and forging or auto mechanics and tractor operation.

"If you have not made your plans to attend this convention you had better do so at once. Plan ahead so that it will be possible to spend the entire



# GOOD TOOLS

Are Essential For

## GOOD WORK

Since 1848 we have adhered to one policy.

To handle only the very best in quality.

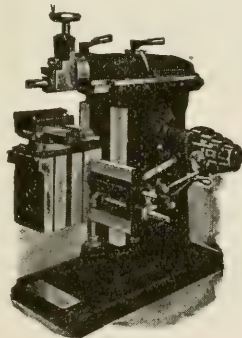
Our new Catalog No. 208 of over 300 pages is of particular value to those interested in VOCATIONAL TRAINING.  
Copy upon request.

### Hammacher Schlemmer & Co.

HARDWARE TOOLS AND SUPPLIES

NEW YORK, Since 1848

4th Ave. and 13th St.



A small Shaper and Milling Machine are absolutely necessary in school work as the work is necessarily small. Small work can best be done on a small

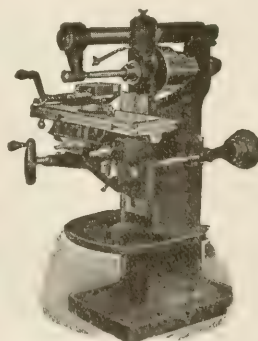
## STEPTOE SHAPER or MILLING MACHINE

They will produce small parts quicker than the larger machines.

They will take up less space.

They will cost less money and you can buy more of them with the same appropriation.

They can be handled easier and quicker by the student than the larger, heavier types of machines, and our seventy-five years of experience with thousands of machines in use giving daily satisfaction are a recommendation for our product that you should not overlook when buying your equipment.



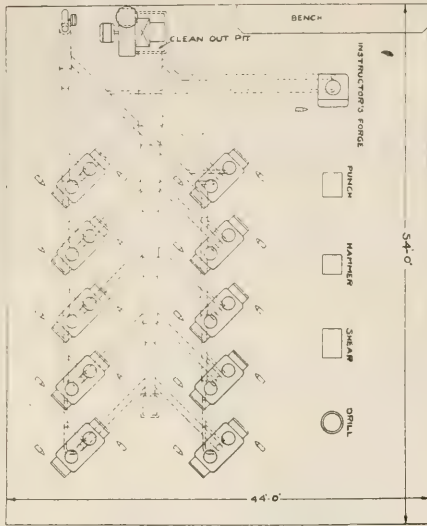
### JOHN STEPTOE CO.

Northside

Cincinnati, O.



Layout of Buffalo Double Down-Draft Forges



## Standard School Equipment

The Buffalo Forge Company are the inventors and sole manufacturers of the Down Draft Forge.

This forge returns the unconsumed gases for complete combustion. Recommended particularly for schools where gases and fumes must be removed because they frequently injure the students health.

Send for catalog 205-31 which contains notes on forge shop practice and modern equipment for schools of mechanical technology, etc.

**Buffalo Forge Company**  
Buffalo, N. Y.

*"Buffalo"*

## FIELD NOTES—(Continued)

week beginning February 7th at Minneapolis and St. Paul. You will need every minute of it and you will return to your job refreshed and enlightened, ready for the last lap on your own job, with renewed vigor and with your enthusiasm for your own job raised about 100 per cent. Just about everybody worth while in vocational education will be there, and the new acquaintance you make will be valuable, too.

If you are not a member and want to receive the very latest information regarding the program and details of the convention write to the secretary, Leonard W. Wahlstrom, 1711 Estes Ave., Chicago. A postal card will do. Write today.

## THE ATLANTIC CITY MEETING

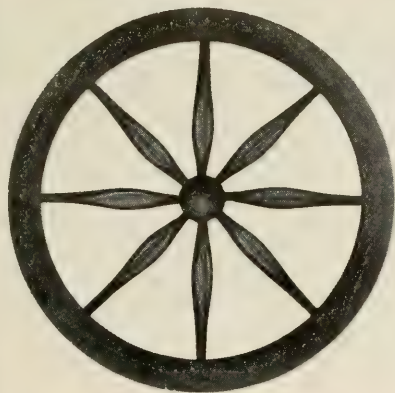
**P**LANS are going forward for the annual meeting of the National Society for Vocational Education which is to be held at Atlantic City, February 24-26, 1921. Details of the program are not yet available, but President William J. Bogan and the members of the various committees are at work on the various details. The next meeting of the executive committee will be held on December 10th, after which date the matured plans may be expected for publication.

There is a probability that the National Society may cooperate with the N. E. A. in carrying out certain details, as the Department of Superintendence holds its meeting immediately following that of the National Society, namely from February 26 to March 3rd.

## WESTERN ARTS ASSOCIATION

**T**he next meeting of the Western Arts Association will be held in Peoria, Illinois, May 3rd to 6th, inclusive. This Association was formerly the Western Drawing and Manual Training Association, and all those interested in art, manual training, home economics and vocational education are eligible to membership. The present membership includes the leading educational people along these lines in the country. The membership fee is \$2.00. The present officers are President, Miss Ruth Raymond, head of the Department of Art Education, University of Minnesota; Vice-President, Albert F. Siepert, dean, Industrial Teacher Training, Bradley Polytechnic Institute, Peoria, Illinois; Chairman of the Council, Miss Florence H. Fitch director of art instruction, Indianapolis. Public Schools; Secretary-Treasurer, L. R. Abbott, director, Department of Manual Training and Industrial Education, Grand Rapids, Michigan. For further information, address the Secretary, 234 N. Division Ave., Grand Rapids, Michigan.

# "HARD TO GET" MATERIALS



No. 400—Tea Wagon Wheel. Sixteen inch size, with rubber tire. Either oak or gum unfinished. Comes in sets of two wheels complete with axle.

**L**EATHERS and Imitations, Upholstery Supplies, Cushions, Nifty Pulls and Catches, Small Box Trimmings, Ash Trays, Umbrella Pans, Chair Cane, Cedar Chest Trimmings, (plain copper bands and fancy designs, locks, cover supports, hinges, handles, casters, etc.), Stains and Varnishes, Tray Handles and Mouldings, Picture Mouldings, Wood Shades for Electric Lamps, Art Glass, Costumer Hooks, Steel Rails for Wood Beds, Card Table Leg Braces, Desk Lid Supports, Dowels, Table Slides and Top Locks, Unexcelled Mirrors, etc., etc.

*New Catalog Mailed Promptly to Any Instructor.*

**Thurston Manual Training Supply Co.**  
**ANOKA, MINNESOTA**

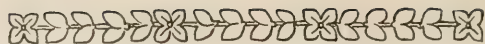
## Teach Lettering with **MACLIN'S LETTERING CARD**

A card of Alphabets, showing Gothic capital and small letters and numbers both vertical and inclined. Shows how to make each letter, the proper strokes, the order in which they should be made, also arrow-heads, fractions, etc. Printed on bristol, size 4 inch x 8 inch. Will lay flat on the board under T-square or triangle, directly in front of the work. In packets of 10. Price per packet, 35 cents.

## **BLANK LETTERING PADS**

Pads of ruled paper for use in teaching lettering. The ruling is in light blue and the paper a good grade. They are convenient and practical, make possible a thoro drill in the fundamentals of lettering, so that both teacher and student can note the development of the ability to letter. In ordering state whether for vertical or inclined lettering. In pads of 20 sheets. Price per pad, 15 cents.

**THE MANUAL ARTS PRESS, Peoria, Ill.**




### FIELD NOTES—Continued

STRONG PROGRAMS in vocational education and industrial arts have been provided for the convention of the Oregon State Teachers Association, which is to meet at Portland, Dec. 20-31. In one of the general sessions "Correlation of Vocational Work in the Public School System" is the topic which will be discussed from four standpoints: agriculture, commerce, industrial arts, home economics. "Present Needs in Vocational Education" will be discussed by W. G. Hemmell, director of the Washington State Board for Vocational Education. Prof. A. R. Nichols, critic teacher in industrial education at the Oregon Agricultural College, is chairman of the Industrial Arts Division. The speakers in this division will be Miss Helen Leathers of West Linn, H. G. Miller, The Dalles, O. G. Reeves, Pendleton, and H. F. Butterfield of Woodburn.

THE MARYLAND INSTITUTE of Baltimore has recently secured as its new director, Alon Bement, former assistant professor of art at Columbia University. Prof. Bement is a graduate of the Museum School of Art, Boston, and the "Naas" Craft School, Florida, Sweden. He was a student at Academy Julian and Collorissi in Paris and was admitted to the Studio Bonnat Ecole des Beaux Arts in 1901. Returning to America he was an instructor in the College of the City of New York from 1904 to 1908 and at Columbia from 1908 to 1912, when he became assistant professor and remained in that position until the present appointment. With its two buildings in different parts of the city and the prospect for a remarkable industrial development in Baltimore, the Maryland Institute has a large opportunity ahead of it.

DON'T FORGET the Tuberculosis Christmas Seals this year. "So long as there are 1,000,000 active cases of tuberculosis in the United States," writes Dr. H. A. Pattison of the National Tuberculosis Association, "so long will the problem of making this group of invalids and potential invalids self-supporting be one of supreme economic importance to the country. The problem involves two essentials, first the cure or partial cure of the consumptive, and second, the adaptation of the cured or apparently cured patient after sanatorium or home treatment to a job that will be remunerative but still within the limits of his strength.

"We know how to cure tuberculosis. Provided the discovery of the disease is made early enough, a large percentage, ranging up to 75 and over, can be cured or restored to walking strength. We have not solved the second part of the problem,—that of putting the tuberculous man or woman back as a full-fledged wage-earner, economically independent as any real wage-earner should be."



## THE SAW WITHOUT A PEER

# SIMONDS

Simonds Saws, the result of experience since 1832, are leaders in every line of industry. Thousands are in daily use in manual training schools all over the world. Because of their quality and cutting efficiency, they lead all other brands.

Start the new pupils in your manual training department right by giving them the best tools to work with, including saws—SIMONDS SAWS.

*Write for illustrated booklet, telling how to care for a hand saw.*

## Simonds Manufacturing Co.

"The Saw Makers"  
FITCHBURG, MASS.

5 Factories

12 Branches





## DIXON'S ELDORADO

*"the master drawing pencil"*



Dixon's Eldorado is an inspiration to fine work—an invitation to begin, to draw—to do!

Teachers of Mechanical or Freehand drawing will appreciate the classroom value of this "master drawing pencil". It makes the lesson easier!

### SAMPLE OFFER TO TEACHERS

Dixon's Eldorado is made in 17 leads. Tell us whether you teach Mechanical or Freehand drawing and we will send you suitable samples.

JOSEPH DIXON CRUCIBLE COMPANY, Pencil Dept. 19-J, Jersey City, N. J.

## How

would you sharpen a spiral milling cutter?

Page 19 in our No. 7 Catalog describe how simply it is done on a



TRADE MARK

REG. U. S. PAT. OFFICE

## Universal Grinder

In this book the machine is illustrated, set up for twenty-three different jobs of grinding.

It will sharpen properly all kinds of shapes of milling cutters also counterbores, reamers and other machine shop tools. In addition it will do accurate jobs of surface, internal and cylindrical grinding.

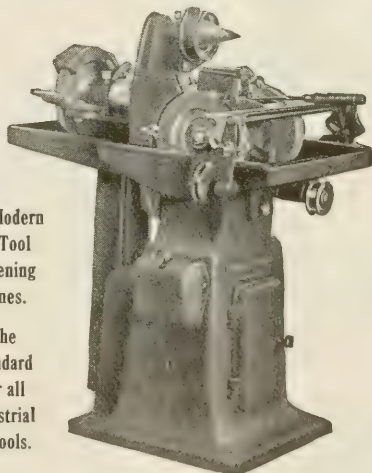
We will mail a copy of this catalog to any instructor for the asking.

**Greenfield Machine Co.**  
Greenfield, Mass., U. S. A.

## Mummert-Dixon Oilstone Grinders

### FIVE LEADING FEATURES:

- |                          |                           |
|--------------------------|---------------------------|
| 1 Coarse Oilstone Wheel, | 3 Grinding Cone           |
| 2 Fine Oilstone Wheel,   | 4 Leather Wheel           |
| 5 Emery Wheel.           | All at your finger's ends |



The Modern  
Edge Tool  
Sharpening  
Machines.

The  
Standard  
for all  
Industrial  
Schools.

No. 481—Motor or Countershaft Drive  
An automatic attachment for grinding long knives can be furnished with this machine.

Send for full descriptive bulletin

MUMMERT-DIXON CO., Hanover, Pa.

# VAUGHAN'S

## Vanadium Supersteel

# HAMMERS

This Hammer is a quality tool. Vanadium, a purifier of steel gives it a life far beyond the ordinary hammer's. Based on laboratory requirements. Head and claw separately treated, tempered and tested. Uniform quality distinguishes all Vaughan's Vanadium Supersteel tools.

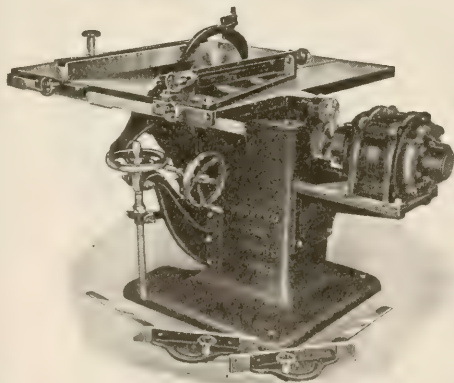
All genuine Vaughan's Vanadium Supersteel Hammers bear our name and are sold under our Brand.

Sizes No. 41, 20 oz.; 41½, 16 oz.;  
42, 13 oz.; 42½, 10 oz.

**VAUGHAN & BUSHNELL MFG. CO.**  
2114 Carroll Ave. CHICAGO

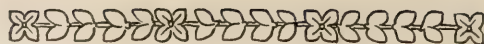
# SAW TABLES

## For MANUAL TRAINING



This cut shows our motor driven spiral gear saw table. No countershaft, no belts. Tilting or stationary tops. Write for circular and prices on our entire line. Address

**ALEXANDER DODDS CO.**  
451-453 Monroe Ave., N.W.  
GRAND RAPIDS, MICHIGAN, U. S. A.



### FIELD NOTES—(Continued)

THE FIRST BUILDING of the Isaac Delgado Central Trades School, New Orleans, will be completed early in 1921, but the School Board, desiring to open the school as soon as possible, has started the school in temporary quarters in the Annex to the City Hall. Evening classes in drafting, and mathematics were opened on Oct. 18th, and a day course in teacher-training was offered. The latter is for skilled tradesmen who wish to become teachers under the regulations of the Federal Board for Vocational Education. H. G. Martin, director of the new school, preferred to begin in this small way rather than wait for the completion of the new building. Such action will enable him to enter the new building with an organization well under way.

A SHEET-METAL SHOP has been added to the equipment of the Woodward Technical High School in Toledo. The equipment is sufficiently complete to do productive work by trade methods. Fifteen students are accommodated at one time. It is being used by evening classes who come two evenings a week for two hours each evening.

FORTY-FIVE MEN have been enrolled by the University of Missouri in its foreman training class in St. Louis. The men are taking a lively interest in the work. Discussions of problems pertaining to the duties of a foreman are the main features of the course.

A new class of twenty men in teacher-training for skilled workmen has been organized by the University of Missouri in St. Louis. The class, while open to men from all trades, consists almost wholly of men from the machinist trade. The same fact is true of the men in the foreman training class. This indicates that the machinists are more eager to take advantage of opportunities to improve than are the men in the other trades.

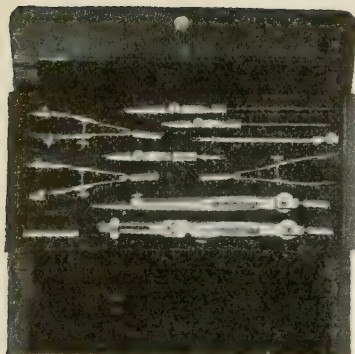
THE U. S. CIVIL SERVICE COMMISSION, Washington, D. C., is still asking for more teachers, especially in trade and industrial subjects. The salaries are from \$1,600 to \$2,400 a year. Applications for examinations will be received up to Dec. 28, 1920.

During the war 4,096 factories were destroyed in France. Of this number, 3,106 had been reconstructed by September.

All of the manual training work in the high school at Meriden, Conn., has been transferred to the state trade school in that city.

THE CLAYCRAFT SHOPS of Lewis Institute, Chicago, now have about 75 students, the majority of whom are Chicago teachers. These shops continue to be a headquarters for information for persons desiring to start school work in pottery.





## Mechanical Drawing Outfits

Set as Per Photo, \$6.65

We have only a limited number of sets to offer at the above price. Send in your order now—so you will get them at this price while they last. All solid nickel silver and steel construction. Save 200 per cent and order today.

**National Instrument Company**

4517 North Lawndale Ave. Dept. A. Chicago, Ill.

## PERSONAL ITEMS

GRIFFITH E. OWEN has been elected president of the Men Teachers' Club of Grand Rapids, Michigan. A popular innovation which he has introduced is a breakfast meeting. About 200 men attended such a meeting recently.

PAUL W. MONOHAN has left his position as director of vocational education in the state department of Public Instruction in Maine to take charge of vocational education at Rumford Falls, Maine.

FRANK P. LANE, formerly principal of Hill Institute, Northampton, Mass., and for the past two years in charge of woodworking, and weaving curative shops at the Walter Reed Hospital, Washington, D. C., is now occupational therapist for the Philadelphia Hospital for Mental Diseases at Torresdale, Pa.

G. E. McLAUGHLIN, president of the Ohio Industrial Arts Association, has announced the date of their annual meeting as Dec. 29th. State Superintendent Vernon M. Riegel and Prof. Ira S. Griffith are to be the chief speakers.

## TEST SHEETS

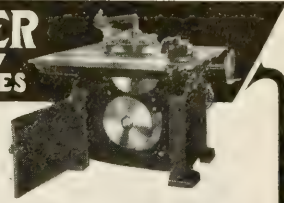
THE MANUAL ARTS PRESS has on hand a few printed copies of the tests given in the Projects Department of this issue. As long as they last they will be sold at the rate of 15 cts for 25 copies.

## MITER SAW BENCHES

The  
"Tannewitz"  
Universal  
Double Re-  
volving Ar-

bor Saw Bench with Sliding Table and Taper Pin Gauges is the only logical tool for the wood shop where frequent setting up is the rule and accuracy is the goal. Send for bulletin.

**THE TANNEWITZ WORKS**  
GRAND RAPIDS, MICH.

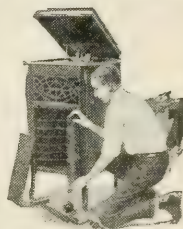


## Build Your Own PHONOGRAPH

Instructive—arouses pupils' enthusiasm—provides one of the best problems in cabinet making.

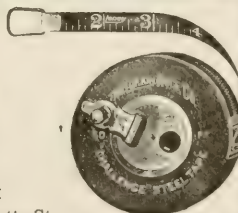
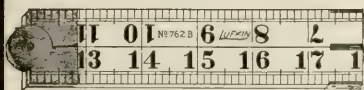
Let Your Pupils Build  
Choraleon Phonographs

We furnish, plans, blue prints, motors, tone arms, case material—in fact, everything required. Full instructions. Choraleon's have fine tone. Play any record. Ask for particulars



**CHORALEON PHONOGRAPH CO.**  
920 7th St., Elkhart Ind.

# LUFKIN



**STEEL and WOOD RULES - - MEASURING TAPES**

Complete high grade lines

On Sale Everywhere. Send for Catalog.

SPECIFY—**LUFKIN**

**THE LUFKIN RULE CO. Saginaw, Mich.**

New York  
No. 106-110 Lafayette St.



# EDUCATIONAL TOYS

By LOUIS C. PETERSEN

Instructor of Manual Arts  
State Normal University, Carbondale, Illinois



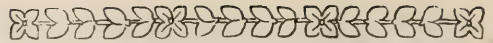
**C**ONTAINS just the information needed to carry on toy-making successfully in the school or home. This new book is comprehensive; it is more than a collection of mere toys, but rather a collection of toys which take into account the child's viewpoint, his proclivities, his emotions, appealing strongly to his play instinct and his sense of humor.

In addition to complete full-size drawings there are directions in full for making the toys, also general directions concerning tools and materials, transferring designs, woods to use, laying out the work, sawing, fastening parts together, and finishing and coloring.

Altogether there are 57 toys, including Animals, Wheeled Toys, Stationary Toys, Moving Toys, Puzzles, etc. All easily constructed in the ordinary school room or in the home.

Postpaid, \$1.80

**THE MANUAL ARTS PRESS**  
PEORIA, ILLINOIS



## TRADE NOTES

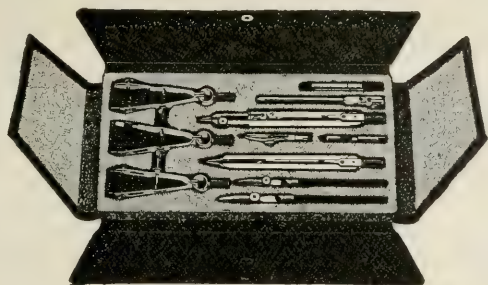
THE PROPER TREATMENT OF FLOORS, Woodwork and Furniture is the title of a 32-page booklet, published by S. C. Johnson & Son. It is an interesting booklet, beautifully illustrated and containing much useful information, and in addition, describes their entire line of wood-finishing specialties—Johnson's Perfect-Tone Under-Coat—Johnson's Perfect-Tone Enamel—Johnson's Wood Dye—Johnson's Paste Wood Filler—Johnson's Electric Salor (varnish remover)—Johnson's Permacote (wall finish)—Johnson's Prepared Wax—etc. The booklet will be mailed free to any reader of the *Manual Training Magazine* who requests it.

IT IS JUST AS ESSENTIAL to have tables, filing cabinets, stools of the proper style and quality in the mechanical drawing room as benches in the shop. In their new catalog "Dependable Drafting Furniture," the Frederick Post Company of Chicago are showing a complete line. Drawing boards, tables, adjustable and portable, to the largest tables used by engineering draftsmen, T-Squares, triangles and a very complete line of Standard American instruments are included. Ask for a copy of this catalog before you make your next purchase.



THE ABOVE ILLUSTRATION shows the plant of the Canvas Products Corporation located at Fond du Lac, Wisconsin, devoted exclusively to the making of canvas goods. It was originally intended as a tent and awning factory, but the making of aprons and other such articles is now a much greater part of the business. Besides aprons used in training schools and laboratories the Can-Pro-Co people make a large line of goods for the dairy industry, including waterproof aprons, ice-cream tub covers, milk can jackets, cow blankets, truck covers, hay stack covers, etc. In the making of its products hundreds of thousands of yards of canvas and duck are used yearly. That the shop aprons made by this company are successful is shown by the ever increasing number of customers.

SIMONDS MANUFACTURING COMPANY, "The Saw Makers" of Fitchburg, Mass. and Chicago, Ill.



## U. S. DRAWING INSTRUMENTS

are the best for shop drawing.  
Can also supply Genuine Richter Instruments.  
Write and give requirements.

**U. S. BLUE-PRINT PAPER CO.**  
CHICAGO, - - ILLINOIS

### TRADE NOTES—(Continued)

have just secured a charter and established a new company in Great Britain, to be known as Simonds Saws, Limited. An office and shop has been opened at 53 Bayham, Camdentown, London, N. W. where a full line of Simonds Saw Steel Products as is demanded in Great Britain will be carried. The shop will provide for maintenance and repair of saws, machine knives, and other edge tools produced by the Simonds Company.

Guy A. Eaves, formerly connected with the Fitchburg plant of the company has assumed the duties as office manager, and Leon E. Wilbur, a Simonds man, who has covered the Great Britain territory since his discharge from the army in France, will be associated with him.

The Simonds Manufacturing Company now maintains plants in Fitchburg, Mass., Chicago, Ill., Montreal, Canada, and a steel mill at Lockport, N. Y. where the steel used in the manufacture of Simonds Saw Steel Products is made. In addition to the new British branch the company maintains twelve branch houses, located thruout the United States and Canada.

"THE MELTING POT" is the title of an interesting and attractive house organ published by the Chicago Flexible Shaft Company, 5601 Roosevelt Road, Chicago. It contains authoritative information about modern heat treating of steel, being published by a firm making a speciality of the field.

## TOOLS

For Manual Training Shops.  
Send your inquiries to and get the especially low prices quoted by

**MONTGOMERY & CO. Inc.,**  
105 Fulton Street New York City

\$25,000,000,000 is the economic loss to this country caused by the ravages of tuberculosis—a preventable and curable disease.

Buy  Use  
**Tuberculosis Christmas**  
**Seals**

National Tuberculosis Association  
381 Fourth Avenue, New York.

**SEND** for new **DESCRIPTIVE CATALOG** of Grammar School, High School and College Text Books. A copy will be mailed on request.

**THE MANUAL ARTS PRESS**  
Peoria, Illinois

## BLACK WALNUT

For Turning, Carving and  
Cabinet Making.

STUDENTS.

Write for price list of special combination assortments, packed ready for shipment by Parcel Post or Express.

## MANUAL TRAINING SCHOOLS

Order your Black Walnut for Carving, Turning and Cabinet Making from

**FRANK R. PORTER & CO.**

500 THIRD STREET NORTHWEST WASHINGTON, D. C.

Our Price List forwarded promptly upon request.

## LETTERING CARD—By E. S. Maclin

A card of alphabets. Shows Gothic capital and small letters both straight and slant. Printed on bristol, size 4" x 8". In packets of 10. Per packet, 35 cents.

**THE MANUAL ARTS PRESS,**

**Peoria, Illinois**





## CLASSIFIED ADVERTISEMENTS



*Do you want to sell or want to buy some school shop supplies? Do you want to employ a teacher? Do you want a new position? Advertise your wants in these classified columns. Rate 20c a line, minimum \$1.00.*

### SCHOOL SHOP SUPPLIES

**ELECTRIC GLUE HEATER**—Best for manual training shops. Economical, safe, reliable, no burnt glue. Many shops are already using them. Two pt. size \$8.00. 3 pt. size \$8.50. Complete with 6' cord. For extra low heat feature \$1.00 extra. State voltage required. Safety Glue Heater Co., Faribault, Minn.

**SODERING SUPPLIES**, including the famous Allen Non-Acid Sodering Fluxes—in stick, paste, salts and liquid form; handy soder sets, sodering tools, aluminum soder and flux. As pioneers in the development of fluxes that far surpass muriatic acid, in every way, and as the original exponents of non-acid fluxes, the House of Allen has for 25 years maintained a position of leadership in the Arts and Crafts concerned with sodering. Send for our Bulletins, L. B. Allen Co. Inc., 4584 N. Lincoln St., Chicago, Ill.

**"HARD-TO-GET" MATERIALS**—Here they are—Chest trimmings (coppered bands, nails, locks, cover supports, handles, casters, etc.), tea wagon wheels and casters, nifty pulls, upholstery supplies, etc. We make any size cushion for your piece. New catalog. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

**MANUAL TRAINING SUPPLIES**—We carry most things needed in the manual training departments such as, tools, imitation and genuine leathers, and upholstery supplies. Tray handles, catches and knobs, casters, mirrors, etc. Write for our Catalog. F. A. Rauch & Co., 410 So. Market St., Chicago, Ill.

**"HARD-TO-GET" MATERIALS**—Here they are—Nifty pulls and catches, costumer hooks, mirrors, leather and imitations, upholstery supplies, tea wagon wheels, etc., any size or style cushion for your chair or davenport. New catalog. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

**GRANDFATHER'S CLOCK**—Blue prints, finishing material and instructions. Also works, dial, weights and pendulum can be purchased from us at surprisingly low prices. Send for particulars of our attractive offer. Clock Company, 1666 Ruffner St., Philadelphia, Pa.

**"HARD-TO-GET" MATERIALS**—Here they are—Tray and picture mouldings, tray handles, wood lamp shades and art glass, dowels, screen hinges, etc., etc., upholstery supplies. Any size or style cushion for your chair or davenport. New catalog. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

### MANUAL TRAINING LUMBER

**MORGAN MANUAL TRAINING MATERIALS**—A perfect system of dry kiln enables us to give you lumber thoroughly dry. Carrying in stock large quantities of different woods permits us to fill your orders with the best selections. Write, sending us a list of the materials you desire. We will quote you attractive prices. Morgan Company, Oshkosh, Wisconsin.

**LUMBER**—Maisey & Dion, 2349 to 2423 South Loomis St., Chicago, Illinois, carry in stock a large and diversified stock of **MANUAL TRAINING LUMBER**. Fifteen years' experience with schools enables us to fill such orders satisfactorily.

**GILCREST LUMBER CO., DES MOINES, IOWA**—Have in stock, **Manual Training Woods** as follows: Mahogany, Cherry, Sap Gum, Red Gum—Plain & Figure<sup>3</sup>, Black Walnut, Aromatic Red Cedar, Chestnut, Plain & Quartered White Oak, Plain and Quartered Red Oak, White Ash, Hickory, Unselected Birch, Hard Maple, Yellow Poplar, Basswood, Red Cypress, White Pine, Yellow Pine, Fir, Glued Up Leg Stock. Correspondence Solicited.

### ELEMENTARY HANDWORK

**EVERYTHING FOR ELEMENTARY HANDWORK**—Also for basketry, weaving, bookbinding and chair caning, Mounting boards, Waldcraft dyes, crayons, burlap, scissors, punch and eye sets. Thomas Charles Co., 2249 Calumet Ave., Chicago.

**BASKETRY MATERIALS** for schools and craft workers. Reeds, willow, chaircane raffia, Indian ash splints, braided rush and straw—fine smooth quality—dyes and finishes. Any amount of reeds sold from a half pound up. Also tools and books of instruction. Send for free catalog. "Everything for Basket Making." Louis S. Drake, Inc., 34 Everett St., Allston, Mass.

**COILED BASKET MAKING** is completely treated in the teacher's manual by Marten entitled **Inexpensive Basketry**. It outlines a course for grades three to six, accompanied by a series of excellent photographs showing every process. Price 45 cents. The Manual Arts Press, Peoria, Ill.

**COPING SAW WORK** by Johnson contains working drawings and suggestions for teaching a course of toy-making in thin wood. Drawings, photographs, course of study, suggestions. Price, 30 cents. The Manual Arts Press, Peoria, Ill.

### UPHOLSTERY MATERIALS

**CUSHIONS**—You know your cushions will be made right when furnished by the Grand Rapids Cushion Company. Write for estimates on cushions and all kinds of upholstery supplies. Grand Rapids Cushion Company, Grand Rapids, Michigan.

**HICKORY CHAIR SPLINTS** a substitute for high cost materials for chair bottoming. Fifty seats, postpaid, \$5.00. Trial order of 20 seats, \$2.00. David Hardin, Hawesville, Kentucky.

### TEXT BOOKS

**GRADE WOODWORK**, with Notes and Drawings, by Joseph F. Parks. 30 pages of shop notes and general information. 102 projects with working drawings. Complete outline for grade school woodwork. Third edition just off the press. Single copy 50 cents. Quantities of fifty 35 cents. Make your work easier by adopting it for your school. Wichita High School Press, Wichita, Kansas, U. S. A.

**WOOD PATTERN MAKING** and wood turning are simply treated in the textbook and note-book combined, entitled **Pattern-Making Note-book** by Greene. Illustrated with simple, clear-cut line drawings. Provides additional space for notes and drawings. An effective teaching tool with beginning students. Price, 32 cents. The Manual Arts Press, Peoria, Ill.

**WORKSHOP NOTE-BOOK — WOODWORKING** — Greene. A small-size textbook and note-book combined. It furnishes a few general and extremely important directions about tools and processes, and provides space for additional notes and working drawings of exercises and articles which the pupil is to construct. It is essentially a collection of helps, ideas, hints, suggestions, questions, facts, illustrations, etc. The note-book is full of suggestions: shows a keen insight into subject matter and teaching methods and is an effective teaching tool. Price, 28 cents. The Manual Arts Press, Peoria, Illinois.

**ART IN DRESS** with Notes on Home Decoration, Bolmar & McNutt. A textbook for high and normal school students of domestic art. It aims to establish the principles of art applied to dress, millinery and home decoration. A very valuable aid in the study of these subjects. Price 65 cents. The Manual Arts Press, Peoria, Ill.



## BOOK NOTES

**E**ARLY in November The Manual Arts Press published the book on *Stenciling* that was announced several months ago. This book was written by Miss Adelaide Mickel, instructor in design at Bradley Polytechnic Institute, and author of *Leather Work*. Very few forms of applied design are suited to so many purposes as stenciling, and yet, up to the present time, it has been very difficult to get designs and design suggestions suited to the different grades of school work, and still more difficult, or impossible, to find detailed descriptions of the process of stenciling in the various mediums suited to a variety of materials. Miss Mickel has done just this.

The book first describes the fundamental process of stenciling and indicates the design limitations of stenciling; it discusses stencil papers and how to prepare them; it tells just how to cut and transfer a stencil; it takes up in detail the method of stenciling with oil colors, with water colors, and then crayon stenciling, spray stenciling and stenciling with dye. Following this are working drawings and designs arranged by grades, beginning with the third and ending with the high school. The book will help many a teacher to direct children in the designing and construction of choice gifts and conveniences. For the third graders there are working drawings of valentines, book-marks, Christmas cards, etc.; for the fourth grade, of picture mounts, blotter covers and iron holders, and so on up thru the grades, with the problems in each becoming a little more difficult until in the high school there are table scarfs, window draperies, cushions, hand bags and the like.

The stenciling problems in the early grades are worked out chiefly in paper, while in the upper grades the correlation is especially with needlework. Any teacher of design who wishes to correlate her problems with the household arts, or any teacher of sewing who wishes to give her work more art quality will find this book especially helpful. It is illustrated with many carefully made drawings and with photographs of many of the completed pieces of work. Besides this, it is a very attractively printed book. It is bound in brown cover paper; the price is 85 cts.

**T**HE first reaction to a newly published book is, of course, the orders that come in. Judged on this basis alone the two publications on toys issued by The Manual Arts Press last month met a real need.

The second reaction is what the teachers say about the book after they have seen it. These second reactions are only just beginning to come in, but

here is one of the first. Joseph H. Berk of the Central Commercial and Manual Training High School, Newark, N. J., writes concerning *Toy Patterns* by Dank, as follows:

"Upon examining this book, I was agreeably impressed by two outstanding features:

1. The designs are neat and attractive and appeal to the play spirit of the child.

2. The designs are workable because they are full-sized and clearly drawn for coping purposes.

I believe that teachers of manual training work will not only find this book (so artistically gotten up) helpful in supplementing their regular work, but will also find it useful in furnishing interesting material for their classes of ungraded and crippled children."

MISS LYDIA M. BOLMAR, author of *Underlay Figures* in writing to The Manual Arts Press sometime ago said:

"I find, thru experience, that very few girls, in costume design classes (outside of a regular art school) and those in domestic art classes, are able to draw a figure, upon which a costume design may be developed, with any degree of satisfaction. If time was taken to develop this ability, within the class period, there would be little time left for the actual design problems.

"On the other hand, a costume designed on a badly drawn and proportioned figure is, by necessity, grotesque, with the result that the student becomes discouraged and loses interest.

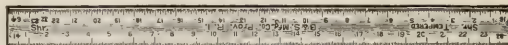
"These six underlay figures, each representing a different style of figure, are designed to remove the above difficulty. By simply laying a sheet of transparent paper over one of these figures we have without worry or trouble, and on an unspoiled and uncrumpled sheet of paper, a suitable foundation upon which to build our design, having gotten quickly at the vital part of the work before the first flush of our enthusiasm has worn off."

**JUNIOR WAGE EARNERS** is the title of a new book that has just come from The Macmillan Co. It is written by Mrs. Anna Y. Reed of the Junior Division of the United States Employment Service. Its purpose is to give verified data on the status of vocational guidance and to indicate the policy and methods of the department of Government Service which is under the direction of the author.

A FEW DAYS AGO we received a letter containing the following reference to *Grammar Grade Problems in Mechanical Drawing* by Bennett.

"Some of the boys have asked me to send for some more so they can have individual books to use at home."

# Patternmaker's Shrinkage Rules



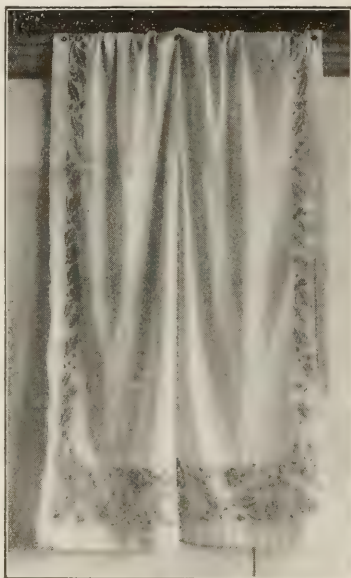
We carry the largest and most complete stock of Patternmaker's Shrinkage Rules in the Middle West; including the following well-known brands: Stanley Boxwood Rules; Lufkin Boxwood Rules, Lufkin Steel Rules, Brown & Sharpe Steel Rules and Starrett Steel Rules. Write us for Prices.

Our new complete catalog of Patternmaker's Supplies, Tools and Equipment is now ready. Write for your Copy.

**ADAMS & NELSON CO.**

1328 W. North Avenue

CHICAGO, ILL.



# STENCILING

By ADELAIDE MICKEL

Department of Manual Arts, Bradley Polytechnic Institute

## A HAND BOOK ON THE ART OF STENCILING

Contains in simple form just the information needed in acquiring the technic of stenciling in several mediums upon various surfaces. Detailed descriptions are given of the materials and equipment used, of the processes employed, together with many drawings and photographs of stenciled objects suitable for home and school work. It includes selected problems appropriate for the different grades in the elementary school and in the high school. Tells just how to proceed from the designing of simple stencils to the stenciling of elaborate designs in crayon and oil on such articles as table runners, window draperies, silk scarfs, etc. A book of 62 pages containing an abundance of drawings and photographs. Price postpaid, 85 cents.

**THE MANUAL ARTS PRESS,**

**Peoria, Illinois**

# MAYDOLE HAMMERS



Adze Eye  
Nail Hammer



Machinists'  
Hammer



Blacksmiths'  
Hammer



Copperworkers'  
Hammer



Adze Eye  
B. F. Hammer

JUST A FEW OF OUR HAMMERS

All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request

**THE DAVID MAYDOLE HAMMER CO.**

**NORWICH, N. Y.**

# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.

WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City.

EDITORS FRANK M. LEAVITT Associate Superintendent Public Schools, Pittsburgh, Pa.

WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON.

Published monthly by The Manual Arts Press, 237 N. Monroe St. Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

---

## CONTENTS

---

VOCATIONAL GUIDANCE IN THE CONTINUATION SCHOOL.....	Owen D. Evans 209
OCCUPATIONAL TRAINING IN THE ARMY (With Photographs).....	James E. Snyder 214
LETTERING.....	Charles H. Sampson 220
FARM BLACKSMITHING (With Photograph).....	John F. Friese 222
THE INDIANAPOLIS CONFERENCE.....	Charles A. Bennett 223
EDITORIAL REVIEW FOR THE MONTH.....	228
Education in the Army—A Remarkable Campaign for School Funds—The Earn-and-Learn System—Dazed.	
A POINT OF VIEW.....	230
“What is the Hitch?” A short play by Arthur Dean.	
WASHINGTON CORRESPONDENCE.....	232
Equalizing Educational Opportunity.	
IN FOREIGN COUNTRIES.....	234
To Raise the Educational Standard of Manual Training Teachers.	
PROJECTS, PROBLEMS AND NOTES.....	236
The Screwdriver that Will Stand—When to Heat Wood Before Gluing—Rocking Chair—Footstool—Shellac Container Pan—An Upholstery Problem—Lacquer for Copper—Weight of Ebony.	
CURRENT PUBLICATIONS.....	242
FIELD NOTES.....	IV
In California—Manual Training in Los Angeles—Vocational Work in Los Angeles—From the Southwest—First Meeting of The Industrial Education Division of the Oklahoma Educational Association—From Minnesota and Dakota—A New Course in Industrial Arts Work at Corvallis, Wash.—In and About Boston—Around New York—Education in Prisons—Juvenile Placement Bureau—Meeting of New York State Teachers Association—The Atlantic City Meeting—The Minneapolis Meeting—Continuation School Work in Peoria—A Fine Example of Cooperation.	
PERSONAL ITEMS.....	XXIX
TRADE NOTES.....	XXX
BOOK NOTES.....	XXXV

*This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.*



## FIELD NOTES

### IN CALIFORNIA

WHEN one thinks of California, one is very likely to recall immediately the city of Los Angeles. To many persons east of the Rocky Mountains, and even to some on the west side, Los Angeles and California are synonymous. There is some reason for this which a study of the growth of Los Angeles makes clear.

Within the last ten years the number of its wage earners has almost doubled, as has also the value of its products. Paralleling its phenomenal growth, the school system has progressed in many branches of education, not least of which is its system of manual training and vocational education.

#### MANUAL TRAINING IN LOS ANGELES

In some cities it might be possible to have a definitely laid out course of study in manual training, but in Los Angeles, this is almost impossible. It is a city of diversified people and diversified localities. Within its borders can be found schools varying from one-room country schoolhouses to large cosmopolitan city schools. In fact Los Angeles boasts of the largest night school in the country, a school with a registration of over 4,000 pupils. In this night school, by the way, there are perhaps a larger variety of manual training and vocational courses than in any school in the country. The leading spirit of the school is its principal, Vierling Kersey, who because of his great success in managing that important educational institution, was recently appointed director of part-time education for the city of Los Angeles. A list of subjects which are taught in the Polytechnic High School will give some idea of the large variety of interests which it is serving. This list includes woodworking, auto lectures, ignition, topography, electricity, architectural drawing, battery work, wiring, machine shop, acetylene welding, vulcanizing, basketry, filing, concrete work, assaying, forging.

In spite of the difficulty attaching to an attempt to effect a uniform scheme of schooling for Los Angeles, C. A. Kunor, the supervisor of manual training, states that they are now attempting to organize a basic course of study in manual training for elementary schools. This course of study is being worked over with the aid of an advisory committee of teachers, and it is being presented from time to time for discussion to a teachers' conference composed of the entire body of manual training teachers of the Los Angeles schools.

Manual training in Los Angeles, as most everywhere, is mainly a course in woodworking, but other materials such as clay, plaster paris, leather,

reed, paper and cardboard are also employed. Models made from clay are generally cast in plaster paris. Leather work includes marking of book covers, cases, belts and the like. It includes also shoe repairing. Reed working is limited mainly to basketry and chair-seat weaving. And heavy cardboard work is devoted largely to the making of portfolios and lanterns. Wherever possible, the manual training work is made to cooperate with the other forms of school work. For agriculture it involves the making of implements. In connection with nature study, it includes the making of bird houses, fly traps and boxes for the mounting of insects.

Every here and there, where conditions warrant it, special schemes of work are arranged. These special schemes involve such kinds of work as wood-block making, printing, and Red Cross work. The determining factors in bringing about each special arrangement are, first of all, the local need and, secondly, the presence of persons who are capable of taking charge of the work. There are also special schemes of work for schools and classes which serve the requirements of ungraded and defective children.

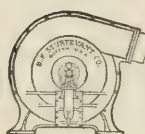
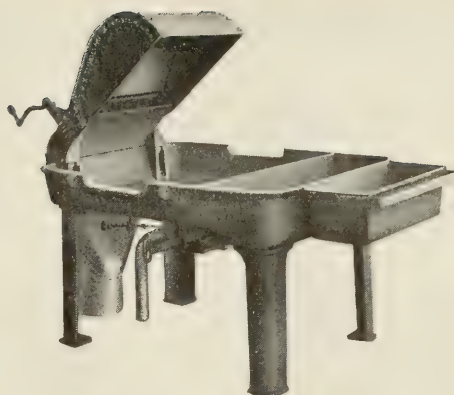
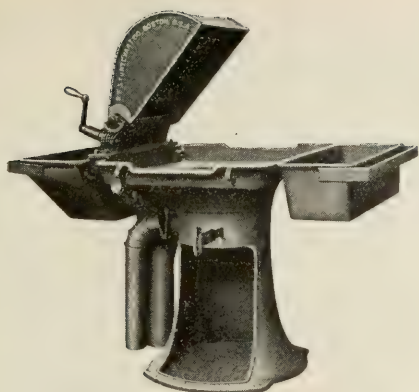
#### MANUAL TRAINING AND AMERICANIZATION

Another direction in which manual training has turned in Los Angeles, is in its connection with Americanization. As part of this phase of its work, Los Angeles offers courses in basketry and weaving for the women, and woodwork and home repairing for the men. Communities interested in Americanization can well afford to take a leaf out of the Los Angeles book in this field.

Manual training is not limited, however, to the elementary schools. It extends also into the high schools. It is, in fact, to be found in every one of the junior high schools. Tho some of the junior high schools have courses that are distinctly vocational in arrangement, most of the work in these schools is prevocational in character.

#### PREVOCATIONAL WORK

The prevocational work is being organized on a new unit plan. The difficulty in establishing all the units desired is largely due to the lack of space, equipment and properly trained teachers, says William Kienholz, supervisor of vocational education. The work includes such subjects as mechanical drawing, printing, sheet-metal work, electrical work, woodwork, plumbing, cement work, and forging. Each of these subjects is designed to cover a period of ten weeks, excepting the course in wood-



**Sturtevant**  
PUTS AIR TO WORK

## Sturtevant Stationary Forges

Are built in sizes and types to cover the entire range of forge work. Their design, construction and wide range of adaptability has won pronounced approval from instructors in the many technical and manual training schools where this equipment is used. It is approval based upon satisfactory performance. The fact is that these forges are easy to work with, convenient, and trouble proof. The many valuable qualities of these forges tend greatly to inspire confidence and interest in the student. Make a personal investigation of an actual installation and reflect with confidence upon the organization back of Sturtevant equipment. Communicate with us and we will gladly cooperate.

*Ask about our complete Forge System.*

**B. F. STURTEVANT COMPANY**

**HYDE PARK, BOSTON, MASSACHUSETTS**

**AND ALL PRINCIPAL CITIES**



## FIELD NOTES—(Continued)

working which is given a period of twenty weeks. Any one of the subjects may be chosen as a major study; in which case, it is made to cover a period of twenty weeks.

The special course for girls, which is a vocational course in home economics, includes home making, catering, laundering, etc. This course covers a period of two years. Of special interest here is the fact that the course includes tool work for girls. In the Boyle Heights Junior High School in Los Angeles, there is being given what is considered one of the best home economics courses to be found anywhere. The course is divided into units of work, and these units are taken up as the time of the year and the interests of the pupils make most appropriate.

In addition to the courses already mentioned, it is interesting to note that in certain schools, there are courses in cobbling for boys, and also home mechanics which includes all kinds of repair work for homes and school. There is also in Los Angeles, a course rarely found elsewhere. It is a chef's course designed to fit for the work of chef, waiter, and etc.

### VOCATIONAL WORK IN LOS ANGELES

Regarding the vocational work in Los Angeles, Supervisor Kienholz says, "It is interesting to note the change in the type of boys who are taking the vocational courses. As a whole, these boys are, in increasing numbers, being recruited from a higher class of students. The vocational courses, says Mr. Kienholz, are now attracting many of the very best students. In fact, most of the students in the vocational courses now are, according to his statement, of standard high school grade.

While Los Angeles has twelve senior high schools, several of which give much attention to manual training and to technical courses; only two, at present, namely, the Lincoln High School and the Jefferson High School, are giving special attention to truly vocational courses. These two schools are devoted so thoroly to such work that they might properly be called vocational high schools.

There are vocational courses, at present, in nine of the senior high schools and in four of the junior high schools. These schools taken together offer seventy-six vocational courses. The varied nature of these courses may be indicated by the fact that of the full-time day courses, five are agricultural, twenty-six are trade and industrial, and three are home economics. There are also eight part-time cooperative, as well as over thirty other part-time classes.

There are so many vocational teachers in Los

Angeles that they have found it necessary to create an organization of their own. The members of the organization meet at frequent intervals for professional improvement and exchange of experiences.

In the fields of printing and of painting, the demand for workers has been so great that co-operative classes have been organized. For the paint courses, the master painters of the city, feeling an urgent need for skilled workmen, and believing that the schools could help to develop the necessary skill, have furnished the equipment required for the course. Both trade preparation and trade extension courses in painting are being given. The courses are conducted in the evening. They are attracting not only boys and young men who might like to enter the trade, but also those already practicing the trade who want further training. Both straight painting and interior decoration are taught. The Los Angeles Board of Education has for the purpose of the course, assigned an entire building. It is in and on this building that the students get their practice.

—CHARLES L. JACOBS.

### FROM THE SOUTHWEST

ON November 26th and 27th the first independent, state-wide meeting of the Manual Training Teachers Division of the Oklahoma Educational Association was held at Ada, Oklahoma. Up to this time the manual arts teachers of the state have attended the annual meeting of the Oklahoma Educational Association at Oklahoma City in February of each year, and have had one afternoon session devoted to a sectional meeting pertaining to their line of work.

Last February the teachers who were present at this short session decided to reorganize, and to form a new and more effective organization which would be of greater benefit to the teachers of the state. It was decided further to have each year a two or three days meeting devoted entirely to the interest of this special group of teachers, and to call some well-known person from outside the state who has had a varied experience in this field of work, as the main speaker for each of these meetings.

The success of the meeting which has been held at Ada, as the first one since this reorganization took place, proves very conclusively that the teachers made no mistake in deciding upon this scheme.

Charles A. Bennett of Peoria, Ill. was invited as a speaker for this meeting. His presence thruout the whole program, and his helpful and encourag-



# National TRACING CLOTH

## - America's Own

A tracing cloth,  
*national* in use and *national* in popularity  
—the only cloth of American make.

A tracing cloth to which you can entrust your choicest plan, upon which you can trace from the faintest pencil line—a super-transparent cloth which assures clear, legible tracings that retain an unusual degree of freshness even after much handling.

Supplied in rolls of 24-yard lengths and in widths of 26 in., 30 in., 36 in., and 42 in. Also in flat sheets, cut to the size you specify, printed in our own plant with border lines and corner card, with insoluble jet black ink, ready for use with no waste of cloth or of draftsman's time in lettering.

NATIONAL TRACING CLOTH is backed by the strongest possible guarantee. Every roll or cut sheet not merchantable, not free from blemish, will be replaced, anywhere.

If you are not now using NATIONAL TRACING CLOTH we confidently invite your personal test of NATIONAL for the purpose of comparison with the cloth you now use.

Send the coupon for a free sample sheet today. Test it thoroughly!

## NATIONAL TRACING CLOTH CO.

SAYLESVILLE, R. I.

### OTHER PRODUCTS

*National Vellum*

*National Tracing Paper*

*National Blueprint Cloth*

*National White Pencil Cloth*

107-3

To THE NATIONAL TRACING CLOTH CO., Saylesville, R. I.

Please send me a sample sheet of NATIONAL TRACING CLOTH  
for comparison with the cloth I am now using.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

FIRM OR  
COMPANY \_\_\_\_\_



## FIELD NOTES—(Continued)

ing addresses, were the main factor in making the meeting the success which it proved to be.

The following is a brief report of the program in general and of some of the topics discussed:—

The first meeting of the series was held in connection with the East Central Oklahoma Educational Association which was also in session in the same city. Here Mr. Bennett spoke on the subject "Two Roads to Culture." The speaker stated that for many years there has been one standard and recognized road to culture—that which leads thru the university or college. He then called attention to another and more recently discovered road that leads to the same destination. The latter, it was pointed out, is a rougher road to travel; it is full of obstructions. This second road Mr. Bennett designated as the way of hard toil, of individual and single-handed struggle—the way of slow progress, but nevertheless a sure way to culture for the few who are brave and persistent enough to overcome the obstructions which are met in the way. This address was particularly helpful in that it called the attention so forcefully to the opportunities that are still open to the boy who is unable to avail himself of the "regular" college course.

On Friday afternoon, the chairman, De Witt Hunt, who is superintendent of shops, A. & M. College, Stillwater, Okla., spoke on "The Advantages of Organization." He gave a number of reasons why the shop and related subjects teachers of the state should bind themselves together into an organization which would be helpful to each teacher individually and also tend to raise the standard of the profession as a whole.

Mr. Hunt made public a few interesting figures regarding the work in the state. He had found out by investigation that there are now 110 schools in the state offering manual arts work in some form. At least 170 persons are now employed as teachers in this field in the state of Oklahoma.

At his meeting Mr. A. Linscheid, president of the East Central State Normal School, made a short address, welcoming the teachers to the city and to the normal. He made the significant remark that manual training is no longer questioned with reference to the value of the subject; the only question now remaining is how best to present the subject. John B. Turner, supervisor of manual training, Pauls Valley, Okla. made a fitting response to this address.

Mr. Bennett then delivered an address on the topic "Education for Appreciation as Well as Production." In this address he made clear the fact that before there can be an appreciation for

a product or a process there must be an experience in the life of the individual upon which experience this appreciation can be based. In order to develop an appreciation of many different kinds of endeavor, then, a student should have a basic experience in a number of different arts, as the plastic art, the graphic art, the mechanics art, etc. Such a basic experience would also enable the student to add to his knowledge by reading books and magazines.

Chas. W. Briles, state director of vocational education, spoke on Saturday morning on the subject "Functioning of the Trade and Industries in the State of Oklahoma Under the Smith-Hughes Law." Mr. Briles stated that the purpose of the vocational work in the state is not in any way to supplant the work that is being done in manual training, but to add the opportunities for vocational training for those students who are not taking the regular courses. He predicted that the work the vocational board is doing will stimulate the manual training work rather than detract from it. Mr. Briles made the interesting statement that society pays the bill for the incompetent workmen who practice their craft just as truly as it would pay the bill for the damage done by unprepared surgeons and physicians should they be allowed to practice without preparation. "When society finds this out," Mr. Briles said, "it will not hesitate to pay for vocational education." This illuminating address made it plain that the vocational work of the state had already gained a good foothold and is rapidly coming to be of great service to the people of the state.

Mr. Briles' talk was followed by a discussion on "Trade and Industries Teaching in Okmulgee" by E. E. Ericson.

An address by Mr. Bennett on "Education and The Present Industrial Unrest" closed the Saturday mornings program. In this address Mr. Bennett pointed out some of the important factors in the industrial problems of to-day and suggested some remedies that would relieve the intense feeling now existing between the employer and the employee.

The business meeting was held on Saturday afternoon. It was decided to change the name of the organization to read "The Industrial Education Division of the Oklahoma Educational Association." This was done in order that the name would include definitely all vocational and related subjects teachers. A constitution was adopted. Several resolutions were submitted and passed upon. Two of these may be mentioned as being of special interest. One recommends a minimum of two years training above the high school as re-



# Use Starrett Tools

## TURN to the INDEX



THAT'S the quickest way to learn how much vital information it contains. But only constant use will teach you the full value of the STARRETT DATA BOOK FOR MACHINISTS.

Experts selected its tables and formulas to meet the requirements of practical machinists. Useless matter has been eliminated, with the result that each of its 180 pages will aid you to solve some specific problem. It is the logical sequel to the Starrett Book for Machinists' Apprentices, now in its fourth edition.

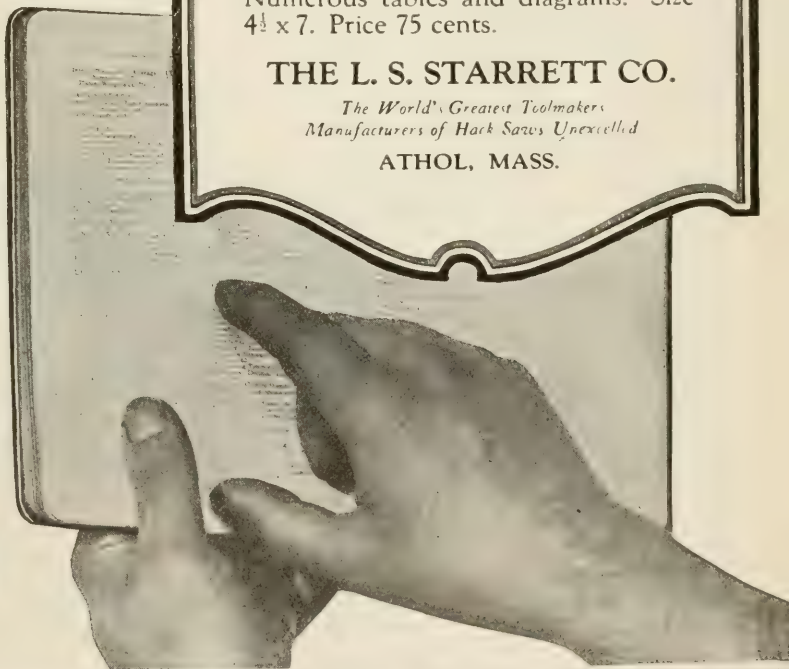
180 pages, bound in red Atholeather. Numerous tables and diagrams. Size 4½ x 7. Price 75 cents.

**THE L. S. STARRETT CO.**

*The World's Greatest Toolmakers  
Manufacturers of Hack Saws Unexcelled*

ATHOL, MASS.

For the Machinist Apprentice Vol. I of the Starrett Books is Invaluable. It deals with how to use Tools and is an Instruction rather than a Reference Book.



# Starrett Books - Vol. II

75¢





## FIELD NOTES—(Continued)

quirements for industrial teachers of the state. The other is a request that teachers of industrial work shall not be required to do repair work for the school or any other work foreign to the classroom teaching any more than would be expected of teachers in other subjects.

The officers were re-elected for another year. They are: President—De Witt Hunt, Stillwater, Okla. Vice President—Harry Mc Kimmey, Oklahoma City. Secretary-Treasurer—Hugh Norris, State Normal School, Ada, Okla.

—E. E. ERICSON.

### FROM MINNESOTA AND DAKOTA

**G**EORGE K. WELLS, of Moorhead, writes of a New Industrial Arts Club which has been formed by the industrial arts teachers of Moorhead, Dilworth and Fargo.

"On Tuesday evening last at the Annex Hotel in Fargo the industrial arts teachers of the three cities of Fargo, Moorhead, and Dilworth met and formed the Industrial Arts Club. This club includes the teachers of industrial arts in the Fargo City Schools, the Moorhead City Schools, the North Dakota Agricultural College, the Dilworth City Schools, Concordia College and the Moorhead Normal School.

"The purpose of this club is to promote the interests of industrial arts teachers and to get the benefit of group discussions on subjects that may come up. Meetings will be held once a month and the topic for December is 'How I run my Shop.'

"Mr. Kimball of Fargo City Schools was elected president and Mr. Wells of the Moorhead Normal School, secretary."

DUNWOODY INSTITUTE, Minneapolis, opened its evening school early in the season with eleven hundred enrolled in the various classes. This number is now increased to over fifteen hundred. The automobile department is drawing the largest number of pupils, and the machine shop work draws the second largest number. New courses offered this year include: baking sweet goods, boiler room operation, jewelry manufacture, production tooling, armature winding, garage accounting and employment management. M. Reed Bass is the evening school principal.

AT THE TECHNICAL HIGH SCHOOL, St. Cloud, an evening school was organized early in November with an enrollment of over five hundred. All of the work under way in the various classes, except the gymnastic, adult English and Americanization classes is vocational. More young men applied for admission to the machine shop courses than could be comfortably taken care of. Mechan-

ical and architectural drafting, some of the commercial courses and some of the courses for women are enrolled to capacity.

—JOHN F. FRIESE.

### A NEW COURSE IN INDUSTRIAL ARTS WORK

**T**HE Industrial Arts department of the high school at Corvallis, Wash., is giving a course in house painting. The school was able to persuade a senior boy who had had eight years in practical house painting to organize a course in the subject. Only seven boys were allowed to enter the course, and these boys took the work because of a real desire to know something about it. This gave an ideal class with which to work. About half of the time is spent in lecture work, looking up material and writing papers, and the rest in practical work. Besides a good deal of painting around high school the boys have done all the interior painting in a new bakery. They began by figuring up the number of square yards of surface; then they were told the amount of white lead and oil necessary to cover a yard and were asked to figure up the total amount of white lead and oil to paint the entire building. This work was all figured up and the proprietor knew the exact cost before the boys began the work. One of the boys in the class writes as follows concerning the course:

"House painting is a new subject to me, as I never heard of it being taught any place but at Corvallis High School. It is new but not impractical, as it takes in exterior work, as walls and shingle staining. In interior work it takes up the staining of floors, calcimining walls and other things inside. House painting also takes up the problem of colors, giving one some idea of color schemes and designs. It also gives you some idea of what colors go best together. A person may not intend to be a painter or an artist, but these things come in handy. If a person has work of his own to be done, and a painter could not be obtained he can do it himself. He knows how to mix his paints, getting the right proportions for first and second coats on the outside and on the inside. In our class we have learned the different substances put in paint, stains and varnishes and their properties in connection with the wood. A graduate of a class in house painting is wise to many other so-called tricks of the trade. He can take care of his brushes, fix proper scaffolds, and get over the most space in the quickest and easiest way. Probably the most important thing one should learn is to do a good job when you get started. One must get the paint in all the cracks, paint with the grain, get close to the ends, like on

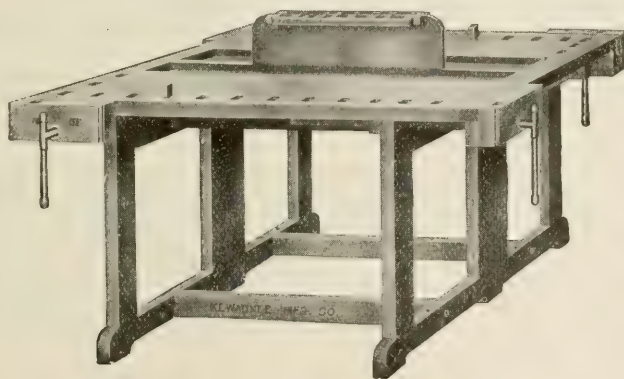
# America's Authority on Laboratory Furniture



This Book represents undoubtedly the most complete exposition of Laboratory Equipment ever published. It describes and illustrates the most complete and highest grade of furniture for the teaching of Manual Training.

Executives who are considering new equipment should have a copy. Just ask for it.

*Address All Inquiries to the Factory at Kewaunee.*



**KEWAUNEE  
MANUAL TRAINING  
DESK—No. 1907**

Head and tail vises are securely bolted together, tool rack is elevated in the center and whole top is one piece. This bench can be supplied with drawer sections if desired.

Pacific Sales Division:  
6th Floor  
Metropolitan Building.  
Los Angeles, Cal.

***Kewaunee Mfg. Co.***  
LABORATORY FURNITURE EXPERTS  
111 LINCOLN ST.

New York Office:  
70 Fifth Avenue

**KEWAUNEE, WIS.**

BRANCH OFFICES:

CHICAGO  
COLUMBUS

ATLANTA  
ALEXANDRIA, LA.

DALLAS  
DENVER  
LITTLE ROCK

KANSAS CITY  
MINNEAPOLIS

SPOKANE  
TORONTO



## FIELD NOTES—(Continued)

boards running to the floor, and be sure not to start more than you can finish and square up or finish along the edge of a board. House painting may seem impractical to some people but I think it is a valuable addition to any manual arts course."

—A. R. NICHOLS.

### IN AND ABOUT BOSTON

THE October meeting of the Boston Manual Training Club was held on Saturday, November 13th., at Healy's Hotel, Boston. It was a luncheon meeting, such as has proved of great popularity during the past few years. The speakers of the afternoon were S. S. Booth, of the Alexander Hamilton Institute, and R. R. Cunningham, of the La Salle Extension University, who spoke on "The Advantages of Extension Education."

Mr. Booth's talk dealt with the subject impartially without any special emphasis on the institution he represents, while Mr. Cunningham gave a more detailed account of the methods used by the La Salle Extension University.

Mr. Booth cited many instances where the only means of education which those in certain positions have is by correspondence courses. He emphasized the value of one being able to choose his own time and place to study, as the extension school methods allow a student to take advantage of odd moments for application to lessons. In comparison with school attendance courses the correspondence courses have many advantages. An individual can progress as rapidly as his ability allows in the correspondence course, while in the attendance school the pace of the group is determined generally by the work of the poorer students. Mr. Booth explained how it was possible for the extension schools to have at their command the services of a large force of experts in almost all branches of endeavor. This is because of the low overhead costs and consequently large profits from tuitions. He cited an example where it was possible for him to supply a business president with data for the solution of a troublesome problem in the short time of two hours. Only thru the services of a corps of experts constantly accessible could such special problems be so quickly solved. The large variety of subjects, especially in business lines, was another point which Mr. Booth made. In closing he emphasized the fact that any course of instruction is of value only in proportion to the effort put into it by the student.

Mr. Cunningham began his talk by pointing out that extension education cannot and never will take the place of residence courses. However, it has a most important place in education. He told of

the dependence of the extension schools upon the established universities, as a large part of the faculty of extension schools are men prominently connected with the big colleges. Mr. Cunningham gave some interesting statistics in connection with the La Salle Extension University. The financial resources are over \$5,000,000. There are over 600 on the educational and administrative staff; over 450 consulting experts and text writers; over 200 field counsellors. There are over 230,000 men and women students and graduates ranging in age from 18 to 60 years. The annual earnings which the university has added to the students' incomes is estimated as more than \$100,000,000.

Much has been said about the small percentage of graduates from the correspondence courses compared with the number who enroll. Mr. Cunningham was able to show this to be much larger than in the case of those who enter resident schools of a collegiate grade. He described the problem method of instruction as carried on by La Salle. Experience has shown that the student is unable to concentrate on a large amount of reading and studying without direct application. To meet this difficulty and make the course hold the interest of the student practical business problems are assigned in a progressive order of difficulty and the development of the student is assured.

Both speakers were well received and the interest of the meeting was manifested by the questions from the floor following their addresses.

—FRANCIS L. BAIN.

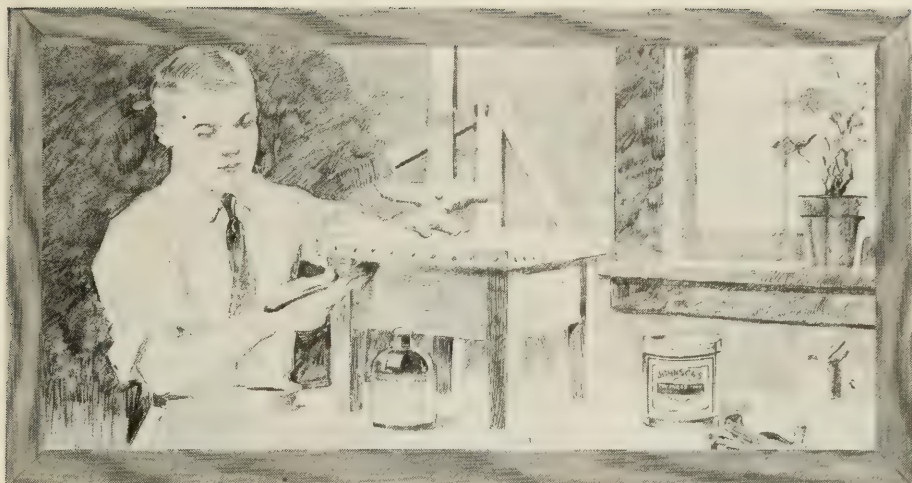
### AROUND NEW YORK

ONE of the most successful cooperative high school courses in the country has been recently transferred from the Erasmus Hall High School to the Cooperative High School. This course is in charge of Mr. Lewis C. Williams, coordinator.

The cooperative course which went into effect in Erasmus Hall February 1, 1918, aims to enable each pupil:

1. To engage in some useful and lucrative occupation without the necessity of leaving school, and yet to graduate with his present grade.
2. To select a vocation congenial to him by testing out the work under real conditions.
3. To earn full wages during the time spent by him in office, shop or factory.
4. To receive credit for this outside work both from the school and from the Regents.
5. When he graduates from school to have not only a "job" but a career with the added advantages of the promotions and increased salaries obtained while in school.





## *“Simply Stain It—Any Color— with Johnson’s Wood Dye”*

JOHNSON’S Wood Dye is just the preparation for staining manual training models. It is very easy to use—goes on like oil without a lap or streak. It is made in thirteen attractive shades—which may be easily lightened and darkened. Complete instructions are given on the label.

### JOHNSON’S ARTISTIC WOOD FINISHES

Johnson’s Artistic Wood Finishes are now being used in nine-tenths of the schools in the Country. They are particularly adapted for manual training work as they may be applied by the youngest and most inexperienced pupils with the best results.

The Johnson Wood Finishes most popular among Manual Training Instructors and Pupils are ***Johnson’s Wood Dye, Prepared Wax, Under-Lac, Paste Wood Filler, Flat Varnish, PerfectTone Under-Coat and PerfectTone Enamel.*** We have a very attractive exhibit of wood panels finished with these products which we are glad to send Manual Training Instructors who will give it wall space in their shop. Write for it.

#### ***Beautiful Instruction Book Free***

Our beautiful new thirty-two page color booklet “The Proper Treatment for Floors, Woodwork and Furniture” is just off the press. It is full of valuable information for Manual Training Instructors and Pupils. Do not hesitate to write for it. We will gladly furnish it upon request.

**S. C. JOHNSON & SON, Racine, Wis.**

“The Wood Finishing Authorities”  
Canadian Factory—Brantford



## FIELD NOTES—(Continued)

6. To graduate with a business experience and acquaintance which are invaluable to him.

Two pupils who, upon conference with the coordinator seem fitted for a certain position, are introduced to a firm of high standing. Accepted by this firm, one pupil goes to business for one week while the other is in school, and the next week they exchange places, thus alternating each week.

A course of study has been arranged best suited to their business needs. Their work both in school and in business is personally supervised by the coordinator.

If a pupil after trial in one position seems better fitted for some other it is usually possible to place him in more congenial work.

During the brief time that this system has been in operation it has met with marked success.

In New York City during the past school year there were in cooperation under this plan:

10 high schools, 216 firms and 1102 pupils. The total earnings of these pupils were \$183,661.39.

The opinions of this course held by employers may be judged from the following remarks from a prominent manufacturer:—

"It is with pleasure that I have to report that the work of the girls whom you have placed with us is exceptionally good. They are intelligent, loyal and quick to grasp details. We have found that your cooperative plan works exceptionally well here because the nature of our work is well adapted to that scheme. It requires just a little patience on our part and careful instruction at the beginning to place your girls on a par with our more experienced clerks.

THE FIRST REGULAR MEETING of the School Crafts Club was held Nov. 27 at the Ethical Culture School, Central Park West. A short business meeting was held followed by an address by Dr. Arthur Dean of Teachers College.

THE SCHOOL ART LEAGUE held its tenth annual meeting and luncheon on Dec. 4 at Hotel McAlpin. A reception at 12:30 preceded the lunch at 1 o'clock. Dr. James P. Haney, director of art in the city high school, presided. The School League, with a limited sum of \$5,000, has provided forms of art education to thousands of children.

### EDUCATION IN PRISONS

THE NEW YORK PRISON SURVEY recently published provides interesting information for vocational teachers. It shows the need of education in all prisons and that education must be closely connected with some trade the prisoners are learning.

The report shows that in spite of the very limited

schooling of prisoners, educational work "occupies a very minor position in the prisons of the state." Only one paid teacher is provided for each prison, and he is "expected to work from eleven to eleven and one-half months a year." Every condition which should make prison education stagnant, uninspired, unprogressive exists to-day.

The men need to feel the advantages of their having an education; they must be made to feel the desire themselves to learn. Therefore the report recommends that provision be made for compulsory teaching of adult illiterates in the fundamentals, and for some elementary and high school subjects on a voluntary basis.

It recommends the teaching of related technical knowledge of trades and vocations as being essential for the mastery of the trades taught. It advocates that the school work have an incentive of a positive nature, in the form of more early parole for those who earnestly seek educational betterment and show substantial progress.

The committee suggests that a uniform course of study in the prisons of Auburn, Clinton, and Wingdale will facilitate general administration. It believes that these courses should be, as far as possible, constructed on the short unit course basis, and that men who progress rapidly should not be compelled to hold the pace of the slower men in the group. It recommends that Great Meadow Prison have educational facilities adapted to the mental defective group assigned there. It recommends the employment of civilian teachers and elimination of inmate teachers except where they serve as assistants under trained civilians who are specialists along certain lines.

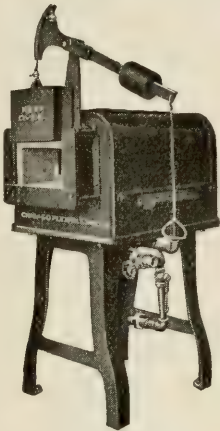
"It would have the state conference idea for prison teachers extended and made a part of the plan of the director of education of the Prison Department. It believes that the library is a very essential part of the educational equipment, and that to serve to best advantage and do its full share of service it should be directly under the administration and supervision of the local present director of education. Likewise it believes that the recreational program, if properly conducted, is purely educational, and that its administration should be placed in the department in charge of education. Furthermore, it recognizes that the physical training program is so coordinated with the recreational program that it is practically impossible to separate them."

### JUVENILE PLACEMENT BUREAU

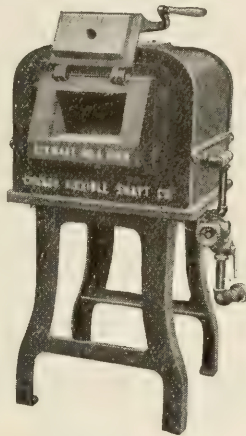
THE MANHATTAN JUVENILE PLACEMENT BUREAU will give all youthful workers a knowledge of the



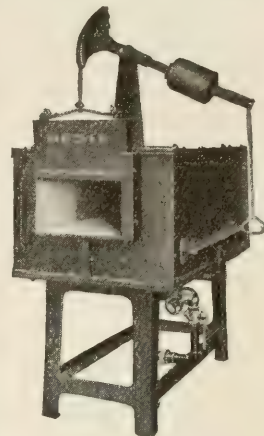
# Supplement Instruction With Quality Furnaces



**STEWART  
No. 27 OVEN FURNACE**  
For Annealing, Carbonizing and  
Hardening High Speed Steel  
Opening, 6"x12"; depth, 18"  
Floor space, 36"x40"  
Gas and air connections, 1½"  
Shipping weight, 1450 lbs.  
For gas or oil fuel



**STEWART  
No. 1 OVEN FURNACE**  
For Carbonizing, Annealing and  
Hardening High Speed Steel  
Opening, 5"x9"; depth, 13½"  
Floor space, 28"x28"  
Gas and air connections, 1¼"  
Shipping weight, 1000 lbs.  
For gas or oil fuel



**STEWART  
No. 10 OVEN FURNACE**  
For Heat Treating, Annealing  
and Carbonizing  
Opening, 12"x20"; depth, 48"  
Floor space, 42"x66"  
Gas and air connections, 1½"  
Shipping weight, 3900 lbs.  
For gas or oil fuel

**V**OCATIONAL instruction must be of superior quality if the students are to get the most out of it. Not only must the teaching be high grade, but the shop equipment as well.

Heat treating equipment that *makes good* and *stays sold* in the industrial field is excellent equipment for training young men in metal working trades.

That's the record of Stewart Furnaces—they get definite results in every day shop performance, guaranteeing first quality tools, gears, dies, machine parts, etc.

Stewarts stand up day after day under the exacting requirements of modern industry; they save their owners time and money, and deliver a superior product—they are ideal equipment for the school shop.

*Our Catalog No. 75 is full of much valuable heat treating information.  
Supervisors of industrial education should have it for reference.*

**Chicago Flexible Shaft Company**  
1128 South Central Ave., Chicago

350 Broadway,  
New York City

Railway Exchange Bldg.  
St. Louis





## FIELD NOTES—(Continued)

vocational opportunities in New York, and guide them in making a choice. The Bureau holds that the years between fourteen and twenty, if not spent in school, should be spent learning some good trade or office work. It seeks to prevent children from making a chance selection, only to find at the age of eighteen or nineteen, that there is no further chance of advancement.

The Manhattan Juvenile Placement Bureau is an outgrowth of the State Industrial Commission and Employment Bureau. It was organized in December 1917 with headquarters at 310 Jay St., Brooklyn. Within two years the office has over 7,000 applications, and it was deemed advisable to open an office in Manhattan, 112 W. 46th St.

Since its opening in November 1919 over 1,900 applications have been received. Of these almost 1,800 were placed, and the chief reasons for not placing the others were that the children failed to return, when they did not procure the first position to which they were sent.

Some wanted more money than they were worth. Many beginners in stenography were not competent, and yet would not consider anything else.

Each applicant's qualifications, such as experience, training, personality, etc., are kept on file, and when an opening offers, which an applicant might fill, he or she is notified. The positions seemed to include all branches of office work, and the different trades that are open to young people between the ages of fourteen and eighteen.

An applicant is first advised to go back to school, and if such advice fails, attendance at an evening high school is suggested, a course suitable for the applicant is chosen, and arrangements made for his attendance.

The office is open every Friday evening until 7:30, that children who are working may make a report on their progress. After holding a position for three weeks a child receives a letter asking him to call during the evening consultation hour. At the end of three months another letter is sent asking the child to call again. In this way applicants are kept in touch with the bureau.

—W. H. DOOLEY.

### MEETING OF NEW YORK STATE TEACHERS' ASSOCIATION

**A**N unusually interesting program on industrial and art education was given this year at the Seventy-fifth Annual Meeting of the New York State Teachers' Association held at Rochester on Tuesday, Wednesday and Thursday, November 22, 23 and 24. James F. Barker, assistant superintendent of schools at Rochester, acting as chair-

man of the general meeting of the combined Fine, Industrial and Household Arts Section, introduced Owen D. Evans, state director of industrial education of Harrisburg, Pennsylvania, who spoke on "The Social Point of View in Part-time Education;" George L. Herdle, director of the Memorial Art Gallery, of Rochester, who spoke on "Present Tendencies in Painting;" and Anna M. Richardson of the Federal Board for Vocational Education, Washington, D. C., who spoke of homemaking education.

Tuesday afternoon was given over to the meetings of the sections on industrial, art and household arts education.

The industrial section was in charge of Stewart F. Ball, supervisor of manual training at Buffalo. H. H. Stewart, director of industrial arts, Mount Vernon, discussed "Industrial Arts in the Junior High School." His paper was commented on by C. C. Bush, director of industrial arts, Olean, New York. "The Organization of Evening Industrial Classes" was the subject of a paper read by Morris Siegel, director of evening and continuation schools, New York city. William J. Small, director of industrial education, Niagara Falls, discussed this paper.

The following program was introduced by Leon L. Winslow, state specialist in drawing and industrial training, Albany. "Art and Industrial Arts in the Elementary School," by Mrs. Lois Coffey Mossman, Teachers College, Columbia University, "Art Education and Industrial Demand," by Richard F. Bach, associate in industrial arts, the Metropolitan Museum of Art, New York city, "Developing a Market for High School Art," by Margaret Giesecke, Technical High School, Buffalo, and "A New Process in Advertising Art," by Rose Acker of the Shaefer Ross Company of Rochester. Mrs. Mossman's paper was discussed by Charles B. Bradley of Buffalo Normal School and Lillia M. Olcott of Cortland Normal School; Mr. Bach's paper by Royal B. Farnum, president of Mechanics Institute, Rochester, and Miss Acker's paper by Harry W. Jacobs, director of art and handwork, Buffalo. Miss Giesecke brought with her an exhibit of craft products turned out at the Tech Studio, a cooperative students' establishment which has been recently established for the purpose of making possible a more complete correlation between school theory and its commercial application.

Wednesday morning was given over to a general meeting devoted to part-time education with James F. Barker, in charge. The program was as follows:

"The Child, the Parent, the Employer and Part-Time Education," Owen D. Evans, director of



## —in Tulsa

The busiest machines in the Manual Training Department are their Wallace Bench Planers and Saws—busy turning out the kind of work that both Mr. Horning and the boys are proud of.

"Let me say that the Wallace Bench Saws and Planers are all, and more, than what you claim for them. The only trouble we have as to their use is keeping the pupils from using them for work which really should be done on larger machines, simply *because the Wallace Bench Machines will do the work and are more convenient.* They have been used hard but are standing up under it in good shape.

"As soon as funds are available, we expect to put these Wallace Bench Saws, Planers or Jointers in all of our Grade School Manual Shops."—N. O. HORNING, Supervisor.

# WALLACE

## Bench Saws, Planers and Jointers

are portable, operate from the ordinary electric lighting circuit as simply as an incandescent bulb. No expense for installing or moving at any time."

As they are smaller machines they are naturally much safer to operate and they are protected by the most positive guards—The Wallace Shutter Saw Guard on the circular saws and the Wallace Flap & Shutter Guard on the Wallace Bench Planer and Jointer.

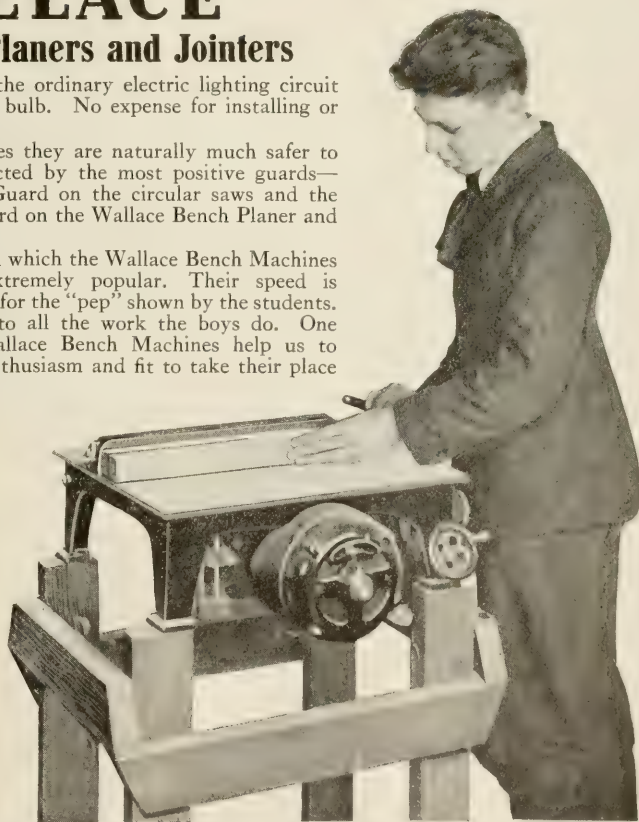
The speed and accuracy with which the Wallace Bench Machines work have made them extremely popular. Their speed is contagious and is responsible for the "pep" shown by the students. Their accuracy has spread to all the work the boys do. One supervisor says: "These Wallace Bench Machines help us to graduate the boys, full of enthusiasm and fit to take their place in business and make good."

## J.D. Wallace & Co.

1413 Jackson Blvd.

Chicago, Ill.

Boston	Detroit
New York	Middletown, O.
Philadelphia	Louisville, Ky.
Buffalo	Knoxville, Tenn.
Pittsburgh	St. Louis
San Francisco	

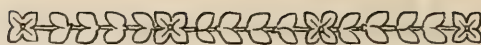
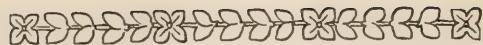


## Also In—

Birmingham, Ala.	Haverhill, Mass.	Columbus, Ohio
Pasadena, Cal.	Quincy, Mass.	Coshocton, Ohio
San Francisco, Cal.	Ann Arbor, Mich.	Chester, Pa.
Brush, Colo.	Big Rapids, Mich.	Easton, Pa.
Meridian, Conn.	Iona, Mich.	Lebanon, Pa.
Washington, D. C.	Booneville, Mo.	Pittsburgh, Pa.
Columbus, Ga.	Kansas City, Mo.	Rockhill, S. C.
Twin Falls, Ida.	Helena, Mont.	Madison, S. D.
Chicago, Illinois	Hastings, Nebr.	Maryville, Tenn.
Rockford, Illinois	Kearney, Nebr.	Denton, Texas
Indianapolis, Ind.	Tonopah, Nev.	San Marcos, Texas
New Albany, Ind.	Brooklyn, New York	Mt. Pleasant, Utah
Ames, Iowa	Raleigh, N. C.	LaCrosse, Wash.
Topeka, Kansas	Ellendale, N. D.	Wheeling, W. Va.
Portland, Me.	Bowling Green, Ohio	Madison, Wisconsin
Brookline, Mass.	Cincinnati, Ohio	Milwaukee, Wisc.
Racine, Wisc.	Laramie, Wyo.	

*Also in hundreds of other Public and High Schools, Colleges and Universities.*

You will find Wallace Bench Saws, Jointers and Planers at the Elbows of Industrial Cabinet and Pattern Makers, Carpenters and Assemblers in Thousands of Plants.



## FIELD NOTES—(Continued)

continuation schools, State Education Dept., Pennsylvania.

"The Status of Part-time Education in New York State," Lewis A. Wilson, director of vocational and extension education, New York State Education Department.

"Some Results in Part-time Education," Morris Siegel, director of continuation and evening schools, New York city.

Sectional meetings assigned to the teaching of the various subjects in the part-time school were held on Wednesday afternoon. At one of these meetings Robert H. Rodgers led in the discussion of the teaching of industrial subjects.

### THE ATLANTIC CITY MEETING

THE November News Letter sent out by the National Society for Vocational Education announces that the general headquarters of the convention at Atlantic City February 24th to 26th will be Hotel Traymore. It also contains a statement from Dr. David Snedden, chairman of the program committee giving topics for discussion, which have been suggested as desirable. These cover the industrial, agricultural, home making and commercial sections as well as the general sessions. The first topic on the latter list is "Problems arising in part-time or continuation school education." Others are, "Probable effect of the Smith-Towner Bill (if it becomes a law) on vocational education," "Vocational education in the United States Army," "Proposed system of vocational rehabilitation," "Education for industrial cripples," "The present situation as regards the operation of the Smith-Hughes Act" and "Reports of progress in vocational education in several states."

### THE MEETING OF THE VOCATIONAL EDUCATION ASSOCIATION OF THE MIDDLE WEST

PLANS for the meeting at Minneapolis on Feb. 10, 11, 12, 1921, are rapidly maturing. The executive committee has announced the preliminary program and those who are familiar with the work of this association need not be advised that the forthcoming program will be fully up to the usual high standard.

A feature of the meeting will be the special reports by the various committees. This association, made up, as it is, of the leaders in the vocational education movement in the Middle West, adopted a policy last year of instituting special investigations on timely subjects, placing these investigations in charge of men and women who are actively en-

gaged in experimenting along various lines. Following are some of the reports which will be presented at the meeting, representing in most cases the study of a group of people covering an entire year:

"Standards in Part-Time Education." F. M. Appleman, assistant director of vocational education for Indiana is chairman of this committee. Others who will discuss this topic include, Geo. F. Buxton of Indiana, R. L. Cooley of Milwaukee, D. J. MacDonald of Cincinnati, and Arthur S. Allen.

A committee under Miss Alice Loomis of the State Department of Education of Nebraska will report on "The Organization of Teacher Training Courses for Home Economics Teachers."

It is fitting that this meeting, held in the center of the milling industry of the world should include a particularly strong session devoted to agriculture. The committee on agricultural education announces the following topics:

"Slack Season Courses in Agriculture."

"Vocational Analysis as a Guide in Curriculum Building in Agriculture."

"The Present and Desirable Future Relations of Vocational Agriculture and Club Work."

"Demonstrations as a Teaching Method in Vocational Agriculture will be handled by A. H. Frick, instructor of vocational agriculture at Grand Rapids, Minn. He will be assisted by his "demonstrational team."

"Standards of Project Work" will be discussed by B. M. Gile and W. P. Dyer of Minnesota.

It is needless to say that the "Problems of the Northwest and of Canada in Vocational Education" will be ably taken care of under the leadership of C. A. Prosser of Dunwoodie Institute, Minneapolis, assisted by other leaders from this part of the country.

"Training of Vocational Teachers" will be discussed in its various phases by President Coffman of the University of Minnesota, D. J. MacDonald of the University of Cincinnati, Ira S. Griffith of the University of Wisconsin; J. O. Steendahl and others.

A further report of the Social Science Committee under the direction of Ruth Mary Weeks of Kansas City will be looked forward to with eagerness on the part of all who had the pleasure of hearing the report by this committee last year.

Arthur F. Payne of the University of Minnesota has the session on Vocational Guidance well in hand, and this promises to be an interesting session.

National Problems will be discussed by Uel W. Lamkin, director of the Federal Board for Voca-



# Manual Training Magazine

JANUARY, 1921

## VOCATIONAL GUIDANCE IN THE CONTINUATION SCHOOL

OWEN D. EVANS

Formerly Principal of the Boston Continuation School; now Director  
of Continuation Schools, State Education Department,  
Harrisburg, Pa.

THE AIM of vocational guidance, as the term is generally used, should be to cause the individual to develop the fullest possible measure of his own vocational capacity. By vocational capacity I mean those things which are required to make a success of a job. They involve first, the development of manipulative skill, the manual part of doing the job, the handling of tools and machines, books, or calculations, which things must be handled in a certain way in order to obtain desirable results on that job; they involve the use of intelligence, both that kind of intelligence which results from any course of general training, innate intelligence—natural intelligence—and that other kind of intelligence which comes from really understanding the materials, conditions and surroundings with which and by which a job must be done; finally they involve character, which implies the possession of thrift, reliability, honesty, grit, that group of instincts, habits and virtues whose sum total in an individual is the measure of his efficiency. The result then of good vocational guidance should be the development of manipulative skill, of intelligence and of character.

Between the ages of fourteen and eighteen years there are more boys and girls out of school than in school. Between the ages of fourteen and sixteen years there are almost as many out of school as are in school. The inherent

restlessness of the age, the marked dislike for academic schooling, ignorance of actual working conditions and opportunities, a lack of any definite plan in life or of a choice of vocation founded on knowledge and experience—these characteristics mark them. Much of the good guidance offered these children while they were attending day school has gone over their heads. They flounder and make all the blunders ignorant young children would be expected to make when they find themselves thrown into the new and strange environment of daily toil.

At this moment the continuation school gets them. A few months later and they would have forgotten much of the education on which years of patient endeavor have already been spent, and the character molded thru years by the patient efforts of conscientious teachers would begin to lose its sharpness of outline. That is, the continuation school gets control of these children at that moment in their lives when they most need vocational guidance. If it is supplied with the right kind of teachers and the right kind of equipment, the continuation school has a unique opportunity for providing vocational guidance of the most practical kind at the moment of most urgent need.

To many minds the word "vocational" means utilitarian. To my mind there can be no vocational training worthy of the name which does not recognize that

our highly subdivided industry, our short and intensive working day, the monotony and the fatigue resulting from this condition, bring about a state of affairs where the right kind of vocational training must not only prepare for eight hours of the working day, but must equally prepare for the other eight hours devoted to recreation and leisure. There can be no such thing as vocational education which does not take account of the avocation as well as of the vocation. In like manner, vocational guidance must be guidance not only for the vocation, but also for the avocation. In the continuation school with its variety of shops and its provision for reasonable transfer opportunity from one shop to another, the pupil has the chance to try out himself and to discover self-aptitude. If already launched in a job which has some future there is the opportunity for trade extension work, and in any case whether the work be industrial, commercial or household arts, there is a mass of related information and of trade technical material. To this is added work in non-vocational lines—cultural lines if you will, in civics, hygiene and English. Here, then, are three factors: the shop, the studies and the teacher—all of which are working on the pupil to develop these three things which are the aims of vocational guidance: namely, the development of manipulative skill, of intelligence, and of character. Meantime the other side is not neglected, and the teacher by class discussions, by Saturday afternoon tramps with some of the pupils, by getting vacation books from the library, and by reading and discussion in class, is directing the children in the wise use of their leisure—in other words, giving them the vocational guidance in avocation.

It is interesting to trace the fundamental pedagogy in vocational guidance. We

recognize education for deferred values. That is, for the storing away of information and knowledge, which will be useful at some future time; and we recognize education for immediate values—that is, the acquiring of knowledge or skill which is to be used at once on the job. We have opportunity for guidance work for deferred values and for immediate values in the continuation school. The first may be called vocational advising, as when we direct the girls' continuation school work along the lines of household arts for future use rather than attempting to tie up with the present and presumably temporary job; or when we have the boy try himself out in one of our shops for the purpose of having him look ahead a couple of years and measure himself against the job which he thinks he would like to have rather than against the job which he now has. On the other hand, we have training for immediate values; that is, vocational guidance where we tie up the work of the continuation school with the present job, or cause the individual or the class to profit by discussing the particular mistake or blunder which this individual has just made in his employment relations. I hope I make it clear that these children are living every day in direct contact with vocation, that they, are actually making the successes and the mistakes which come from being on the right or on the wrong job; that in the continuation school we live as it were in the midst of a great laboratory in which countless experiments are going on all the time, and the result of each of these experiments is immediately valuable to help us to guide right an individual or a group.

If we have one all-embracing purpose in the continuation school it is to get the pupil into a frame of mind to have a program, to have a plan of life. We realize that we are dealing with an adoles-

cent boy or girl—that the plan of today will be discarded tomorrow—that luck, caprice or change of fortune will bring about a new plan immediately. Nevertheless at any moment the individual should be going toward a definite goal. He is face to face with the vital need of making up his mind, but we do not intend to hurry him in the process, nor to debar him from the privilege of changing his mind.

Every department then of the continuation school is a means for presenting to the pupil vocational advice which has a deferred value or vocational guidance which has an immediate value.

As soon as the pupil enrolls in the entry class effort is made to get that pupil to think along some definite plan and to make a choice of that department in the school which will give experience valuable for making a choice. If the pupil has entered one class, transfer to another class is allowed with reasonable ease. Housing conditions, however, prevent the Boston Continuation School from making proper use of assembly methods for guiding the children. A continuation school ought to have facilities whereby all the pupils in the building could be gathered together once each session, where a short, pertinent address emphasizing a single vital point could be given by some selected person—teacher, employer or other competent speaker.

In the classroom, whatever department a pupil may attend, more or less formal discussions occur on the requirements and opportunities in various lines of work. Some of these are based on the actual experience of pupils in the class, others are designed to get the pupils thinking about the future. Again and again in the class occurs a casual but intentional comment on vocational opportunities or on specific successes or blunders of pupils—in each instance the

comment being based upon instances that arise in connection with the pupils' employment. The shop experience gives constant opportunity for revealing to the pupil both his strength and his weakness. All kinds of results follow. One pupil as a result of shop experience persists and eventually obtains employment in a chosen line. In others the negative results, which are quite as valuable as the positive results, ensue and the pupil directs his interest to another line of work. More frequently than one would expect, it happens that a pupil working along one line of work, obtaining shop experience in school along another line of work, applies to the school for help in getting employment on an entirely different line of work. This is done not carelessly but as a result of the combination of experiences which the pupil is receiving. At every point in the pupil's contact with school and with employment, the teachers are alert to see that he is acquiring experience, or making growth along the three essential lines of manipulative skill, intelligent thought and planning, and character formation.

The employment bureau or placement work of the school is especially valuable in guiding those pupils who most need it. These are the 20 per cent of drifters and unfortunates. Before this department was in existence the situation of one pupil looking for one job was apparent. Now the situation is twenty pupils and sixty jobs. A little calculation on permutations and combinations shows what an infinite variety of opportunity is here presented to the wise school executive to adjust the pupil to the job. The cumulative effect of this shifting on the jobs over a period of a year is of tremendous value in helping the pupils to settle upon their permanent program of employment. Even the handling of the delinquent pupil gives constant opportun-



ity for vocational guidance. He is caught in the act. His blunder is a proved fact and he is still smarting from the effects of that blunder. At that moment when the impression is most likely to be vivid, his mistake can be pointed out to him and he can be turned from the wrong path into the right path.

Some of the specific methods used in the school are of interest. The follow-up work of the teachers is perhaps the most important of all. One-third of each teacher's time is devoted to visiting the place of employment and the home of the pupils in order that the knowledge of the pupil's environment may be used to render the work of the school most valuable to the individual pupil. This follow-up work not only gives the teacher a valuable insight into actual working conditions, but also brings to the surface evidence as to the pupil's capacity or desires which would rarely be discovered within the walls of the classroom. The good books which are available on vocational guidance, surveys on various industries, bulletins of the Federal Board for Vocational Education, the classic literature as it were of vocational guidance, are used to the utmost. In addition, the trade paper, the mechanic's handbook, the advertising pamphlets, the factory paper or house organ, have for these pupils an interest which does not arise in the day school. Many of our teachers have accumulated a mass of such material and have found it especially valuable in stimulating these children along the line of vocational choice. The previous school record is used, but always with reservations. The inevitable mutability of youth and the danger from a didactic attitude on the part of the teacher must be borne in mind. As a general rule the pupil who was good in day school is good in the continuation school and is good in employment. But so many individual ex-

ceptions occur that the teacher must be always alert lest he misjudge the pupil. They outgrow so many of the old faults and grow into perennial new faults at this age. The teacher must be careful to take the pupil as he is, not as somebody records that he has been. Especially must we avoid that continental point of view which takes it for granted that the youth of fourteen is settled for life. With children of that age in America we can do a fair job on determining the probable life interest of the pupil, but it is a dangerous and un-American practice to try to determine for the child at this plastic period his life vocation.

In distinguishing between a life interest and a life vocation I mean that a pupil might clearly indicate an adaptability for agriculture as a life interest, but that it would be the height of folly to try to make that pupil decide whether his life vocation would be raising stock, raising grain, or market gardening. In like manner he may early reveal a life interest in commercial work or in mechanical work, but he ought not to be expected to make a choice of a commercial vocation and decide whether he wishes to be a stenographer, a bookkeeper, or a salesman. The chances are that he would be as successful at one as he would be at another vocation in that field, and the pupil whose life interest lies in the field of mechanical work will probably be equally successful as a machinist, a pattern maker, an electrician or a sheet metal worker. We recognize this fact in the shop work which is given in the school. We use the basic trades like dressmaking, power machine work, bookkeeping typewriting, machine shop work, printing, electrical work, etc. The best we can do with children of that age with the short amount of time at our disposal is to introduce them to the fundamentals. Most of the fundamentals within a given field are as applicable to one

vocational subdivision of that field as they are to another. Accordingly when a boy spends a year in our machine shop and after he has left us a combination of luck and desire on his part permits him to become a pattern maker's apprentice, we do not feel that any of the specific shop experience or of the vocational guidance which went with it in the school has been wasted.

Another device is to call back selected groups of pupils who have graduated from the school, to find out what, after a year of absence from us, they are doing in the way of employment. One of the present weaknesses in our continuation school plan is that we work faithfully with the child up to the age of sixteen, and just when we get that child to the place where he is good raw material to hand over to a line of employment which has progression in it, we lose the child, and the element of luck which is such a tremendous factor in uncovering vocational opportunity, combined with the inevitable inertia which causes most people, juvenile and adult, to slacken effort the moment the guiding hand is taken from them, causes a great loss on the investment we have just made in guiding the child. This fact is peculiarly dominant, because after the age of sixteen so many more opportunities are open to the juvenile worker. The remedy is to raise the continuation school age to seventeen or eighteen years.

Another helpful agency is our practice of handling the children in small groups of between fifteen and twenty, laying emphasis constantly upon individual instruction. Vocational guidance is of course absolutely an individual matter and this scheme provides good opportunity for such individual work. The fact that every teacher in the school is on the task of vocational guidance every hour of every day counts for much. A single vocational counselor in a large

school is handicapped not only by lack of knowledge of the individual, but also by the impossibility of doing much effective guidance in mass or group instruction.

An interesting recent development along these lines is the work being done by the Healey fund of the Rockefeller Institute. This is a plan for scientific tests or measurements applied to the subnormal child in order to determine vocational aptitude. Some of our teachers are helping in this work and are gaining valuable experience along these lines.

The last method, and it might also be called the first method and the method which is ever present, comes from our constant effort to have the pupil consciously making a plan of life. He may change that plan several times, but just so surely as he is thinking consciously about his future, every bit of vocational guidance that is directed toward him will have a valuable result, whether that result be positive or negative. Specific results of this work in the continuation school are of course hard to measure. We uncover so many individual cases each week which show that good work is being done that our faith is strengthened to believe that much more is being done which cannot be measured. The kind of employment which is open to the juvenile worker is aptly termed the blind-alley job. In three thousand ordinary jobs, about three hundred of them have, in themselves, some instructional content and a chance for advancement. The remainder of the jobs are of the kind described as "blind-alley" jobs. Now this situation cannot be changed. Our American technic of commerce and industry, to which I have referred again and again, makes such jobs inevitable. But when a child working on such a job receives the stimulus of the right kind of vocational guidance in the continuation school, you

get this result: There is opportunity in every job providing the young worker applies to that job the best that is in him. Experience on the job itself is of little value. Guidance in the school apart from the job is of little value. But when the job is combined with the school and guidance is administered; when attached to the blind-alley job you have an open-eyed youngster with a program and a plan, you have knocked the end out of the blind-alley job. Out of motivated school work comes motivated life and there is no blind alley where there is motive. The home, the

school, the employer, and the child are all working together. The result of such work gives us those things which at the very beginning of this discussion we defined as the aim of vocational guidance. In the child are developed manipulative skill, intelligence on things in general and on the job in particular, the habits and virtues which constitute character, and the result is wise guidance both for vocation and for avocation. In this type of school it is really possible to attain that condition which we have adopted as a sort of slogan in the school: "Vocational guidance every hour of every day for every child."

## OCCUPATIONAL TRAINING IN THE ARMY

JAMES E. SNYDER

1st Lieutenant, Cavalry

**E**ducational officers of the Army insist that their trade courses be called occupational training, pointing out that the soldier is taught more than the mere handling of tools, but developed to the point where he is of use to the Army as a skilled artisan who can solve his own problems as they arise. Without this training he would be of little worth to the service, since the varied duties of a commanding officer demand that he be free from details that his subordinates should be able to handle.

And after all, the army plan of education is not entirely altruistic, but was born of the growing scarcity of available skilled labor necessary to the modern technical fighting machine. This paucity was first brought home to the War Department during the mobilization of the late war, when the percentage of trained workmen was found to be critically low. Less than half the required number of specialists could be furnished the Field Artillery, Coast Artillery, En-

gineers, and the Construction Division during the entire period of mobilization despite the splendid efforts of technical schools and the Army itself.

Since the armistice, industry and commerce are considerably retarded in progress because of this scarcity, which is more acute than ever because of casualties in the war, and emigration. During the month of July, according to figures from the Canadian immigration authorities, more than 1500 persons emigrated from the United States into Canada, of whom 1268 were native born Americans. Their places must be filled if possible, and industrial concerns are forced to offer wages with which army pay cannot compete. So the Army is forced to develop its own workmen.

For material, it was only necessary to keep part of the sinews of war, and for instructors, the army has found many among its own personnel and engaged the rest from civil life. Since the plans of education and trade training were published





U. S. ARMY SCHOOL BLACKSMITH SHOP, CAMP HUMPHREY, VA.

in a general order, September 5, 1919, civilian teachers have been hired by local commanders on terms determined by local conditions, average salary, number of classes, and so on. However, since July 1, 1920, instructors have been placed on a civil service basis, which will be explained later.

Two types of education are being given, occupational training, and what is loosely called educational courses. The latter comprise elementary work in grade school subjects for illiterates and aliens, languages, mathematics, chemistry and so forth. At Camp Upton, New York, a recruit educational center has been in operation for a year, turning out foreigners with a good working knowledge of English, and former illiterate native born citizens who have been taught to read

and write their own language. Five other similar schools are being established, each with an approximate capacity for 1,500 students each. The course lasts six months and if the recruit has not covered the work in that time, he is regarded as hopeless. Generally however, less time is required.

There are at present, more than 3,000 classes in occupational training. These include, under a general classification of seventeen departments, 118 subjects. The building department for instance, includes courses in carpentry, masonry, concrete work, painting, brick-masonry, structural work, and allied subjects. In the metal department, divorced from machine training, are trained blacksmiths, pipe-fitters, plumbers, sheet-metal workers and welders. The other depart-



U. S. ARMY MOTORCYCLE INSTRUCTION SHOP

ments include agriculture, animal husbandry, automotive, business, electrical, food, highway construction and topography, leather, medical, music, power, printing, textile, and other trades.

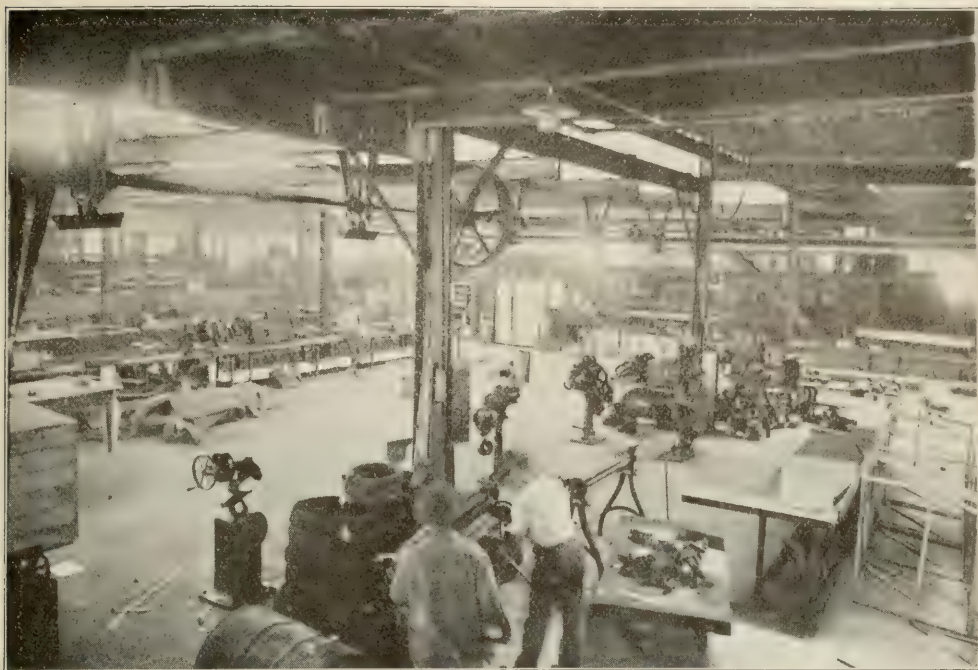
As to methods, the War Department has profited hugely by the experience of training during the war, and the recommendations of the prominent educators who were members of the advisory board on education at that time. This board numbered such men as Dr. C. R. Mann, of the Carnegie Foundation, New York City, Dr. James R. Angell, dean of the faculties at the University of Chicago, J. W. Dietz, of the educational division, Western Electric Company, Chicago, and Dr. S. P. Capen, specialist in higher education, Washington, D. C.

These educators were able to put into effect some long wanted reforms in instruction of which the "job-sheet" is one example. Ignoring for the purposes of this article, further consideration of the educational courses, we may say that

insofar as the occupational teaching is concerned, the army's policy is to train by application. The soldier is put at a simple task at first and is not advanced to more difficult tasks until he has mastered it. Thus, classes as such do not exist, for tho the students are grouped as much as possible into classes of the same sort, each man progresses independently according to his ability.

For a textbook, the student has a small board handed him when he goes to work. On it is affixed a varnished page with the required task laid out, the materials required, simple instructions as to how to proceed, and following, pertinent questions. For instance, in the machinist course, the beginner receives a page labeled "Job 1, Using a flat file. Materials; stock, vise, file." He is first asked, on paper, "1. Can you see between the file and the piece?" After the soldier has ascertained whether or not he can, he reads, "2. Is the file thicker in the middle than at the ends?" He looks to





WHERE MACHINISTS ARE TRAINED

see and then reads on, "3. What is one reason for this?"

After he has learned the proper way to hold the file, how to remedy faults in applying it, and so on, he is given a slightly more advanced task, or job. His second job is to use a hack-saw on material furnished by the instructor, his third to grind a cold-chisel, and if he is sufficiently competent, he progresses thru jobs in welding, using a power lathe, drill-press, shaper, planer, milling machine, and grinding machine. On the more advanced jobs, such as the dividing head, he finds appropriate questions, such as, "How many turns are necessary to index for a gear of 20 teeth?"

These job sheets are prepared in book form, with detachable pages, printed in bold-face type. They are illustrated in some cases where it is considered necessary. A few weeks ago orders were issued to prepare such a book of job sheets on assembling and operating tractors. A

force of men simply ran a tractor out in the open, laid clean canvas around it, and took it to pieces, laying out each part systematically. Photographs were taken of the parts as they were disengaged, the process noted and dictated to a stenographer on the spot and when transcribed, these notes formed the textbook. The same procedure was followed in assembling the apparatus, and the textbook was practically ready.

Instructors find in the various textbooks, a section in which they are cautioned, first, that an effective instructor must be accurately informed as to what jobs a carpenter or blacksmith, for instance, may be called on to do in the Army, and second, that methods of instruction must be used which in the time available will best train the men for these jobs. The second injunction seems unnecessary but it reminds the teacher again that the Army is doing this, first for its own needs. The secondary aim of



this training is to make the soldier more productive when he re-enters civil life.

The teacher is expected to outline the results wanted rather than detailed methods of attaining them, so that the ingenuity and resourcefulness of the student may develop. It is set forth that the courses are arranged not for the average but for the best student and that only those who show sufficient ability will be advanced. For example in the auto-mechanics course, only those students who master the wheel and axle work will progress to the study of the engine, and only those of the latter class who show a good understanding of the construction of the engine will take further gas engine study. Only all-round specialists will be allowed to take up timing and ignition, while the less capable soldiers are kept to work within their capacity.

All jobs are made reasonably sequential and present real problems, the working out of which will equip the student with first-hand knowledge of the practical details of construction or operation, and provide a background for an understanding of scientific principles. Graduates are not rated on their average proficiency but according to the kinds of work they can do. Three-eighths of the soldiers' day is devoted to education, about 640 hours a year. An effort is made to intensify school work in winter months.

Out of 2,728 instructors in vocational classes, 1,067 are civilians. Most of these are men, but in some vocations, notably business courses, women are employed. In the educational courses fifty per cent of the civilian teachers are women. Of the 50,000 students voluntarily enrolled, more than 32,000 are in occupational work. Once started, education in the Army becomes a military duty and must be continued through the course. In addition, there are more than

49,700 others who are on duty of such nature that they receive certain training of an occupational nature, as in the Signal Corps and Motor Transport Corps.

As stated before, the instructors have been put under civil service since July, and must now take the civil service examination before being accepted. They are not finally accepted until after six months actual work, when the control of the military commander ceases and they become full-fledged civil service employees. One of the reasons for this change was due apparently to the wide variation in salaries. The average salary for trade instructors for May was \$113.84, but this shows many differences in the various camps. At Fort Wright, Washington, and Columbus Barracks, Ohio, for instance, the average rate is \$230, monthly. At Camp Lee, Va. the monthly average is \$287, at Camp Vail, N. J., it is \$262, while at other places it is much lower. The demands of some camps are naturally much greater than others, so that where only a few men are interested an hour a day is all that the instructor needs to give them.

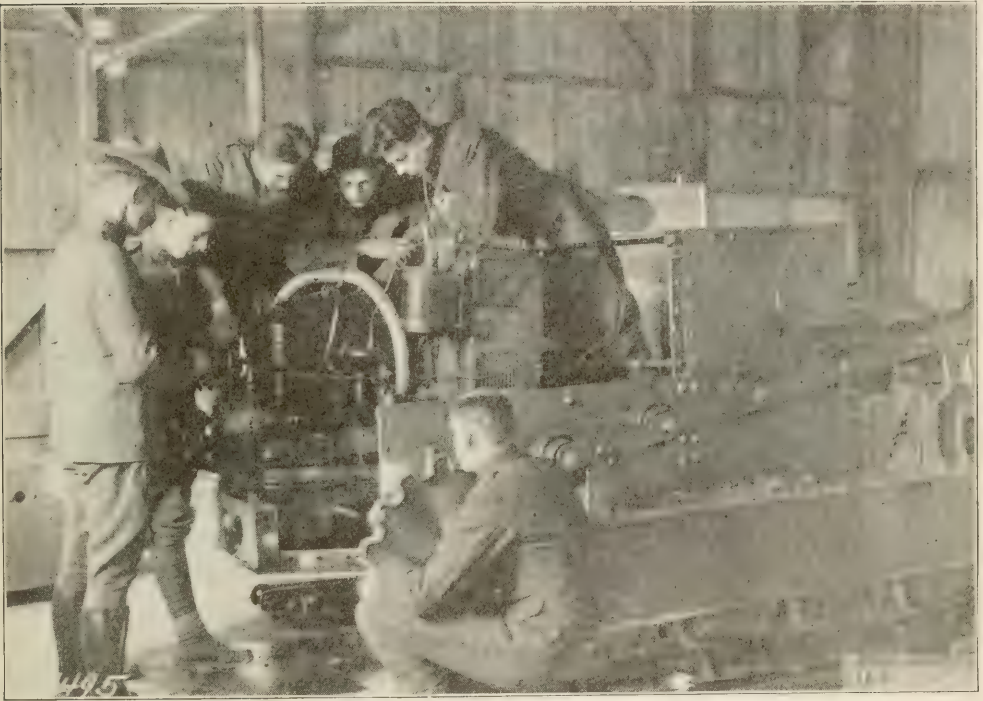
In future, salaries will range from \$1,500 to \$3,600 a year. A circular issued June 22, 1920 by the United States Civil Service Commission sets forth the details of recompense and the requirements for acceptance. It may be stated in general that instructors in occupational training must have a common school education and at least four years practical experience in shopwork, six months of which must have been in the line of work for which appointment is sought. Graduation from a normal school, technical high school or college will gain credit for two years of shop experience and each year of teaching one of the technical subjects will count for a year of shopwork.

It is in line with the policy of the War Department to use civilians for instruc-

tion, thus leaving officers and non-commissioned officers free to perform their technical military duties. A summer school for instructors at Camp Grant, Ill., recently held a "commencement" day with a class of 1,200 instructors, who had been learning what the Army needs and how these requirements can be met.

The demands on the educational system increase in proportion to the size of

the Army, and it is rapidly growing. More than 15,000 recruits were obtained in July and nearly 20,000 more during August. The number of soldiers enrolled in classes has by this time exceeded all past figures, so that plenty of vacancies exist for educators who care for the prospect of traveling across the United States or to the Army stations in Germany or the far East.



VIEW IN AN ARMY TRACTOR SCHOOL

## LETTERING

BY CHARLES H. SAMPSON

Huntington School, Boston

WHEN I see a good job of lettering on a good looking drawing I immediately have pleasant thoughts and draw pleasant conclusions—pleasant conclusions particularly about the man who did the job, even though I have never seen him. I certainly do enjoy looking at lettering which indicates thought and care on the part of the one who made it. I am sure that the producer enjoyed the work when he did it, too. A good letterer just can't help enjoying doing master work. I refer entirely to freehand lettering and not to a result manufactured by using tee-square and triangle.

All of which leads me to believe that industrial teachers can afford to devote more attention to good lettering. This refers particularly to those engaged in the teaching of mechanical drawing.

Why is this matter well worth while? I believe there are several reasons why it pays to insist upon neat and careful work in this respect. For example:

*First.* Many students do not fully realize that a blueprint or drawing is the printed page from which the workman must read. This printed page may or may not be legible. This depends upon the man who made it. Do you as a student prefer to read a scrawl or a neatly written paper? If your favorite books were written in illegible characters, would you enjoy them as much as tho they were neatly printed? You would not. There is some psychology mixed in this. And the workman is affected by this just as much as any other human being would be. He will enjoy starting the work in hand if he has as the beginning of it the study of a neat looking blueprint. His smile will not be evident if the first impression is that of work carelessly done. The work

of the draftsman will affect that of the workman and it is up to the draftsman to see that he is not to blame. Isn't it?

And yet, in the final analysis it is really up to the teacher to see to it that the draftsman will produce a satisfactory result. To require good lettering from the student is the means to the end. I always have believed and always expect to believe that the general appearance of a drawing or blueprint depends very largely on the lettering. If the lettering is good the drawing looks good; if the lettering is poor, the result is exactly opposite.

To insist on neat, carefully constructed freehand lettering pays a dividend to everybody.

*Second.* I feel sure that he who letters well will do other things well. The spirit of the thing is catching. If the instructor can make the student realize the value of doing his lettering so well that those who see it will be impressed by its quality, he will have accomplished a far-reaching result, because other work will be done equally well. The manner of keeping notes will improve, mathematics papers will be passed in which are examples of neatness and clearness, there will be no future trouble with John because of work slovenly done—if he learns to letter well. The hours of practice may become tedious hours but in the end there is sure to be a reward in the satisfaction of having done something well.

*Third.* Much of my work in the past has required the correction of drawing plates from correspondence students— young men whom I seldom saw except at the end of the course. If I received news that a student who had been studying with me contemplated a call to see what his instructor looked like, I usually



wondered along the same line of thought concerning him. I found that the quality of his drawing work and especially of his lettering gave me a pretty good basis to work on. The work done was more or less of an index to what I expected to meet in the flesh, so to speak.

Lettering carelessly executed because of indifference on the part of him who made it told me that the man who made it would

a-A S O 2 R 7

b-O T

NO. 1- VALVE

NO. 2- VALVE

FIG. 1

be careless in other matters—personal appearance and clothes, for example. And at least ninety per cent of the time I was right.

Now then, if the work appearing upon a drawing sheet tells a story about the man who did the work, why isn't it worth while to make the man by making him do creditable work? This is the teacher's job, and a job well deserving effort. I believe that the result can be accomplished by making a drive at lettering. The student who actually learns to letter will, once he learns, be satisfied with nothing less than good work.

I feel somewhat proud of the fact that I have taught, or rather made many future draftsmen teach themselves, to letter. They did it largely because they learned the real meaning of the word "PRACTICE". They always got to the point where they hated the word, but once that trying period was behind instead

of ahead, they were thankful for the enforced practice because of the result. They had learned to letter because they were willing to practice and were willing to follow a few simple rules. Perhaps these rules are worth remembering. They are:

1. Use nothing harder than a 4H pencil. This is the best all-round grade to use.
2. Keep the pencil point sharp.
3. Always use very light horizontal guide lines.
4. Remember that if letters and figures were properly made they could be included in a parallelogram. a, Fig. 1.
5. Use single strokes. That is, don't sketch.
6. Use down strokes and strokes to the right, b, Fig. 1.
7. Separate words by a space equal to at least the width of a letter and place letters in words close together.

I consider this last rule one of the most important and have usually illustrated the point by using the word VALVE.

The tendency for the beginner is to allow the same space for each letter and the same space between the letters. Note what happens by applying this rule to this word valve, No. 1, Fig. 1. And then note the difference when a little thought is given to spacing, No. 2, Fig. 1.

In No. 1, equal spacing is employed both for letters and space between letters. In No. 2, note how the A can be placed under the V and the V over the L. Spacing has made a poor looking word more or less respectable. Just a word about the L and its near-twin brother T. There is a lot of open space here. It can't very well be filled in but when either of these letters is used in a word, make them narrower than the other letters.

The above rules are easy to remember, and not theoretical enough to bore one. Observance of them, used in conjunction with practice will produce results beyond the fondest expectations.

## FARM BLACKSMITHING

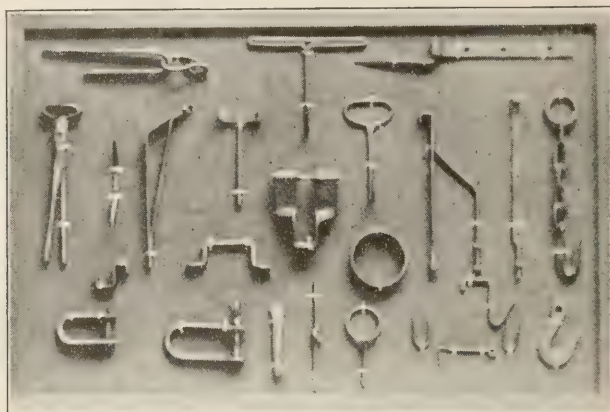
JOHN F. FRIESE

Instructor in Metalworking, Technical High School, St. Cloud, Minn.

THIS is the time of the year when preparations are being made for what are frequently termed "Farmer's Short Courses." Such courses are the special problem of the consolidated schools, township high schools, and some city high schools in agricultural sections.

or model. If the piece fits the place for which it is intended, and is strong enough, that is all that is asked. In other words, this is rough blacksmithing, as compared with technical courses in forging.

The tools used by a class in farm blacksmithing should not include any



SELECTED PROBLEMS IN FARM BLACKSMITHING

They range in duration from six to twelve weeks, usually opening early in January, the farmer's dull season.

Animal husbandry, farm crops, commercial work related to farm, general English, blacksmithing, and farm mechanics are some of the subjects given in such courses.

In any instruction in blacksmithing given to short course pupils the instructor will be quite sure to find two noteworthy facts about his class. First, the boys will probably work harder and lose less time, and therefore cover more ground, than most regular day pupils. Realizing that their time is limited, they try to get the most out of it. Second, they will not wish to take the time to forge pieces to the very exact dimensions of a drawing

not usually found in a farm shop. In addition to the forge, all that is needed is an anvil, hammer, bolt, pickup and straight-lip tongs, rule or steel square and a hand punch. In addition to these, some files, a post drill, wrenches, set of taps and dies, and a blacksmith's vise would make a very complete equipment for the farm, and should, therefore, be about the maximum used in short course instruction.

Simple shaping of iron; bending, punching and drilling, and riveting of band iron and flats; use of taps and dies; simple scarf welding; and the forging, hardening and tempering of a tool made of tool steel should be the minimum of instruction in the various forging and related processes.

In the illustration are shown some of the forgings made during the 12-weeks' short course at the Technical High School St. Cloud, Minn., last year. In addition to new work some of the boys brought broken parts from their homes to repair. Others measured and made sketches of articles at home, and then made them in the class. In trade catalogs will be found many suggestions for new work of this kind.

Where carpentry is also given in a course of this kind there is a good opportunity for close correlation. The boys may make gates, eveners and other wagon

parts, build wagon boxes, etc., then forge the iron parts, and assemble complete.

In this as in other subjects given in short courses the instructor may find the students critical of the work being done. Nothing but that which has a direct bearing on farm activities will long hold the attention of these young men. Considerable effort was required by the writer on one occasion to show a boy that the rope hook, familiarly known as an "awning cleat" could be used advantageously on the farm. Once convinced of its use in his work he entered into the making of it with a zest.

## THE INDIANAPOLIS CONFERENCE

CHARLES A. BENNETT

IT IS generally conceded by those who have attended the annual conference of men engaged in training teachers of manual arts conducted by the U. S. Bureau of Education that it is the choicest meeting of the year. It is the choicest, not merely because of the fine friendliness of this group of men, but also because at that conference only one topic is commonly presented at a session, leaving ample time for discussion, and also because there is perfect freedom in discussion, no self-seeking among the members, and a desire on the part of everyone to learn the truth.

The conference held at Hotel Severin, Indianapolis, on December 9th, 10th and 11th, was the eleventh in the series of this annual event, and in some respects was the best that has been held. It seemed to some of the men who have attended all or nearly all of the series, that the one this year reflected a better hold on the essentials of the problems discussed and pointed the way to more real solutions of important educational problems than any previous meeting.

The conference opened shortly after 10 o'clock on Thursday morning with a brief introductory address by the chairman, Dr. William T. Bawden, assistant to the U. S. Commissioner of Education. He spoke of his own pleasure and satisfaction in attending the conference from year to year. He referred to the men as a group of specialists, but specialists who are interested in all phases of education and especially interested in every one of the rather wide range of topics on the program. In referring to the searching character of the discussion in previous conferences he quoted from one member who characterized the conference as "a Russian bath."

### OCCUPATIONAL ANALYSIS

The first topic discussed was "Occupational analysis as a basis for determining the content of trade courses." This was presented by J. C. Wright, chief, industrial education service, Federal Board for Vocational Education, Washington, D. C. He distributed copies of forms used in an industrial education



survey of the American Writing Paper Co. of Holyoke, Mass., also copies of an analysis of the trade of an automotive repair man. While discussing the survey of the paper industry he pointed out that the first essential of procedure in such a study is to determine the particular occupations for which training should be given; second, what are the available training agencies, as day school, evening school, part-time school, etc; third, after the schools have been organized and the teachers selected, what shall be the content of the instruction to be given. He maintained that in many cases there are few, if any, textbooks available, and that the school cannot depend upon tradesmen teachers alone to be successful. Mr. Wright's conclusion was, that new textbooks must be obtained and that they must be based on an analysis of the job for which training is being given. He did not seem to care whether the subject-matter be presented from the job or the process standpoint, but he insisted that the teacher should ask, "What is going to be needed in this occupation?"

In this connection he pointed out that a machinist is not likely to be as successful in automotive repair work as a blacksmith, altho many courses for automobile repair men include considerable training in machinist's work. He said that the repairman seldom makes parts or changes the form of parts; he sends machine work to a machinist, but he himself must find out where the trouble is in the machine.

#### THE ITINERANT TEACHER OF MANUAL ARTS

The session on Thursday afternoon was devoted to a report of the committee on "The Itinerant Teacher of Manual Arts in Rural and Village Schools," which was presented by C. S. Van Deusen of the State Normal College, Kent, Ohio. The report was not theoretical, but gave in detail the organization plan of the work

of a manual training teacher and a domestic science teacher employed to teach in five schools in Coitsville Township, near Youngstown, Ohio, and travel together "a la Ford." He discussed many of the factors entering into such a plan and then stated that State Superintendent Riegel of Ohio favors the itinerant teacher plan for village and rural schools. Concerning the qualifications of itinerant teachers Mr. Van Deusen said that "The itinerant teacher's job calls for a more resourceful teacher than a city job, and a higher salary should go with it. Fairly well qualified teachers are available for this work."

This report started a lively discussion, which led to the question of the kind of things boys in the rural schools should be allowed to make. Several of the men testified to the fact that country boys very often prefer to make something attractive for their homes rather than to make "pig troughs" for use on the farm. It was pointed out that a farm boy as well as a city boy ought to be given an opportunity to satisfy his impulse toward art expression thru handicraft. A. C. Newell said, "I believe that if you teach the processes, it makes very little difference what is the material result." If you teach the tool processes in things for the home, these processes will function later on the farm in construction work. H. W. Schmidt of Wisconsin pointed out that the character of the equipment is a big factor in manifestations of interest in the work. He argued for an adequate equipment.

#### TEACHER-TRAINING SCHEMES

On Thursday evening the topic was "Progress in the development of plans for preparing teachers of industrial subjects." This was opened by Edwin H. Smith, head instructor in manual arts education at Carnegie Institute of Tech-

nology, and Arthur F. Payne of the University of Minnesota. Each told of the recent developments in his own institution.

In discussing the plans presented, H. H. Braucher of the State Normal School, Emporia, Kansas, said that he was apprehensive two or three years ago when we were told that an eighth grade graduate with practical experience was acceptable as a teacher. He was glad to learn that a higher standard is now being set. "The ideal teacher is the man who is a thoro mechanic and a university graduate. This standard is difficult to attain, but it should be kept as the ideal." On the other hand, George F. Buxton of Indiana University said that he did not see how a university is going to make a four-year standard of teacher-training when the demand for teachers is much greater than the supply.

Kenneth G. Smith, state supervisor of vocational education in Michigan, emphasized the importance of getting the right kind of teachers to meet present needs. He said, "It is more important that we do not fall down on the teacher-training work than that we inspect the schools to see whether they are living up exactly to the requirements of the state law. Our work will stand or fall with the teacher-training problem."

#### CONTACTS BETWEEN SCHOOL AND INDUSTRY

The Friday program began with a discussion of "The need of more vital contacts between the school and industry" by D. J. MacDonald of the University of Cincinnati, and De Witt S. Morgan, teacher of history at the Arsenal Technical Schools, Indianapolis. Mr. Morgan said that there comes a time in the life of many a boy when the home and the school lose their power to influence him. Then the industry holds the balance

of power. The task of making citizens needs the cooperation of the home, the school and the industry, and there is no doubt about being able to gain the cooperation of the high-minded men in industry. There are many of them who will be glad to help. What we need to know is just what part of the training belongs to the school and what part to the industry.

Mr. Morgan said that to give familiarity with shop methods means either (a) a part-time course, or (b) a shop atmosphere in the school itself. Bringing factory methods into the school will turn out people more able to meet the expectations of industry, but it is difficult for the school to do this all the time.

An industrial plant should assume certain functions within itself, and whatever educational work is done in the industry should be conducted in harmony with American educational ideals. The best results may be expected only when the home, the school and the industry work together with perfect understanding.

#### EDUCATIONAL USE OF JUNIOR WORK EXPERIENCE

At this session, also, Emery T. Filbey of the Junior Employment Service, Department of Labor, Washington, D. C., presented "The program of the Junior Employment Service." This proved to be one of the features of the entire convention. He began by saying that the junior guidance and employment service of the Government is not interested in increasing the school period of a boy at the expense of productive service to society. It is, however, very much interested in helping the boy during that "tempering period" between the school and permanent employment." He cited a case where 900 boys left employment in a large industry, of which number, 600 were "fred." He then stated his main

contention, which was, that "it is possible to make this work experience a part of the educational program," but "in order that junior work experience may function effectively, it should be supervised just as study and play must be supervised if satisfactory results are to be expected." It has been common to think of blind-alley jobs as wholly undesirable and therefore to be avoided, if possible. The newer viewpoint is to make educational use of the experiences gained in such jobs—even to making educational use of being "fired." Considerable "turnover" in minor occupations is not a bad thing from the educational standpoint. In fact, it is a good thing, because some jobs are much more desirable than others, and because a new job brings new experience. If the change of job can be supervised, each new job may be part of an educational program and comparable to a new study in the course pursued in school. Placement is, therefore, regarded as means in education.

In discussing this viewpoint Mr. Selvidge said that we do not yet know very much about giving the kind of advice needed; we have very little data upon which to base such advice. Advisement is far from being an exact science. He thought, however, that we could take some comfort in the fact that in spite of our advice the boys are going to get on fairly well anyway. All the work of the world will need to be done in the future as in the past. The accidents of industrial life determine about 80% of life's occupations. Mr. Vaughn said that there were not enough desirable jobs in any community to provide for 14 to 16 year-old boys and girls, therefore, poor jobs should be made a means of education. Mr. Filbey closed the discussion by saying that we cannot afford to neglect the educational opportunity of the junior employment service.

#### THE JUNIOR HIGH SCHOOL PERIOD

"Problems of manual arts teaching in the intermediate school or junior high school" were discussed on Friday afternoon by Dr. George C. Myers of the University of Michigan, H. W. Schmidt of the State Department of Education in Wisconsin, and William E. Roberts, supervisor of manual training, Cleveland, Ohio. The first two speakers presented carefully prepared analyses and the second and third outlines of courses. Dr. Myers said there was nothing more pitiable than to find a manual arts teacher who does not recognize the aims of the work he is teaching. Every teacher should have a clear conception of the purpose of his instruction. To this end we should state the aim more definitely in this prevocational period so that results can be measured. Even the boy should know more definitely just what he is expected to get out of the work he is doing.

Albert F. Siepert of Bradley Polytechnic Institute summed up the aims as follows: (a) Ability to do—skill; (b) Power to think—facts, knowledge; (c) Ability to appreciate.

Concerning the testing of results of instruction, he said that checking what a boy has done in mechanical drawing, for example, is not the way to check up his habit formation. That must be done while the boy is working.

#### PART-TIME SCHOOL PROBLEMS

"Special problems of the teacher in part-time classes" was the subject on Friday evening. The topic was presented by Edwin A. Lee of Indiana University, Ira S. Griffith of the University of Wisconsin and S. J. Vaughn of the University of Illinois. Mr. Lee concluded that the part-time teacher must be better prepared for his teaching than any we have seen before. He must be a



social scientist. By this is meant that he must not only have training in the theory of sociology, but he must have training in the technic of social investigation and social service. He must be able to understand the children in their various relations to (a) occupational life, (b) home life and (c) leisure activities. He must be responsible for guiding as well as teaching a group of pupils, and this group should not be more than twenty-five in number.

When the question of aims in the part-time work came up for discussion Mr. Filbey said, "The objective of the part-time school is the same as that of the junior high school with this modification, that the background is industry instead of the home."

#### NEW METHODS IN TRADE TEACHING

A fitting climax to the conference came on Saturday morning when Robert W. Selvidge of the University of Missouri told the members about the "Occupational training work in the United States

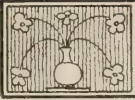
Army." It was essentially a detailed exposition of the methods that have been developed in the Army schools under the inspiration and direction of Mr. Selvidge. The presentation was illustrated with analysis sheets, instruction sheets and drawings. The sentiment of those present seemed to be that this Army scheme for trade teaching is a contribution of the highest order to the pedagogy and the administration of trade teaching. It focusses modern educational science on the most practical and vital problem of vocational education.

The February number of this magazine is expected to contain an article by Mr. Selvidge covering the same material he presented at the Conference.

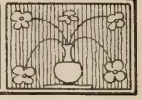
The Conference closed with a resolution expressing to the U. S. Commissioner of Education the appreciation of the members of the Conference and the hope that it will be continued in the future. It is expected that the meeting next year will be held either at Bradley Polytechnic Institute or at the University of Michigan.

*In our country and in our times no man is worthy the honorable name of statesman who does not include the highest practical education of the people in all his plans of administration.*

—HORACE MANN.



## EDITORIAL REVIEW FOR THE MONTH



### EDUCATION IN THE ARMY

FROM time to time in the past these columns have called attention to the forward-looking educational policy of the U. S. Army. In this issue we give to our readers a more satisfying statement than ever before, because it is a report of what is actually being done. In our February issue we expect to present in detail the trade teaching methods that have been developed in this work in the Army which are making the Army work notable in the field of practical pedagogy.

In this connection we call attention to an editorial published on November 30th in the *Tulsa Tribune* which reflects the spirit in which this educational work is being carried forward. It is as follows:

There has recently been an increase in army enlistments. Two reasons for this are suggested by the Secretary of War.

The slackening of industry, which has meant considerable unemployment in some localities, is cited as turning many young men toward the Army and Navy. The educational advantages offered to enlisted men, however, are regarded as the chief cause.

Both technical and academic training are available to soldiers and sailors. The opportunity to fit themselves for better jobs after their term of service is ended, and to be paid while doing so, is proving a real attraction.

There is another side to this education in other than military subjects which appeals to the civilian mind. It does away with the narrowing influence of the strictly military life. While the men are acquiring the discipline which is essential to an army, they are also studying subjects which encourage them to develop their own special abilities, to think thru problems not usually connected in any way with soldiering, and to follow interests which will be helpful in all work they do after they have left the service. It is difficult to fear a tendency to Prussianism in military life when such wholesome civilian activities are introduced and carried on along with the strictly Army work.

### A REMARKABLE CAMPAIGN FOR SCHOOL FUNDS

THE Cleveland campaign for increased funds for school and municipal purposes was a remarkable example of what can be accomplished by civic co-operation. Ohio taxes have been for many years controlled by what is known as the Smith 1 per cent law, which operates uniformly for all districts. The law was perhaps just and equitable at the time it was passed, but as years have gone by it has become an increasing burden to cities, and all departments of city administration have come to the point where it was practically impossible to operate. A law was recently passed making it possible for cities to assume, by vote of the people, additional local taxes in two ways: first, by increasing local tax levies in a certain percentage, and second, by exempting from the existing school laws interest and sinking fund expenses on outstanding bonds. It was proposed to place the question of raising funds for both school and municipal purposes before the public at the November election. Separate campaigns were at first anticipated, but leading business men felt that such an arrangement would be detrimental to municipal interests and that the two campaigns should be conducted as one. Five separate items were presented for the decision of the people: Increasing the school tax levy, school bond tax exemption, \$15,000,000 school bond issue, increasing the city tax levy, city bond tax exemption.

Many interests cooperated in carrying forward the campaign. School officials, city officials, all of the newspapers, the Cleveland advertising club and other organizations, as well as many high mind-

ed men and women. About \$50,000 was contributed by public-spirited citizens as a publicity fund. The work was organized largely thru the school system. Meetings were held in every school district for which speakers were provided. The appeal was made directly to the home thru the school children, and toward the close of the campaign a clear and concise printed statement of the exact conditions confronting the schools and municipality was sent thru the schools into each home. The campaign slogan was "Vote 'Yes' Five Times." The children of the schools played an active and efficient part in the campaign. The poster work of children under the direction of the art department in the schools was particularly effective. The result of the election showed a vote of considerably better than three to one on the three school items, and slightly better than two to one on the municipal items. Undoubtedly, the city items carried because of the tremendous aid given by the schools.

—W. E. ROBERTS.

#### THE EARN-AND-LEARN SYSTEM

**W**HERE the part-time cooperative courses have been well managed and the instruction held up to a high standard, the results have been satisfactory to both students and employers. In this case the good management must begin at the school end. Inefficiency there is fatal. The coordinator must have the right viewpoint, practical experience in industry and a good supply of tact. Then, if he stays in one place for several years, the results will come.

One of the by-products of the scheme is the money earned by the boys, and this is

a factor not to be forgotten. If a boy can earn a few hundred dollars a year while pursuing a high school course which gives him a good general secondary education and a first-class trade at the end of the course, he can see that it is worth while to stay in school. In some cases the dollars tip the balance from not going to high school at all to going for four years.

Some figures from the Hyde Park, Mass., High School show what has been done in a well organized scheme. James C. Clark, the coordinator says that the aggregate earnings of the boys in his school last year were approximately \$25,000 or an average of \$430 for each boy. The boys received from 18 to 45 cents an hour.

#### DAZED

**N**OT only in politics but also in education the pathetic figure is the man who stands dazed between the past and the future. He is held to the past with ties of emotion, while he feels an urge to go forward but he doesn't know which way is forward. His greatest wish would be satisfied if the road forward would go round in a circle and take his children over the same road that he has come. But he knows that this cannot be and so he stands dazed while others move forward with confidence and joy in the vision of things to come.

In such a perplexed position must have been the city high school principal who said recently:

"I am opposed to the manual training as an exclusive system of education. I mean that, unless a boy is positively bent upon devoting his life to some trade, he is wasting his time. Of course I believe that every man should learn to use his hands, to be adept at some manual instrument as our fathers were. It is a wholesome and healthful influence."

*What I mean by an art is some creation of man which appeals to his emotions and his intellect by means of his senses.*

—WILLIAM MORRIS.



# A POINT OF VIEW

## WHAT IS THE HITCH?

A SHORT PLAY BY ARTHUR DEAN

*Scene:* Office of superintendent of schools in any manufacturing or trading village of five thousand inhabitants. Background shows four woolen mills, one specialty machine factory, and several small jobbing shops. Foreground, the superintendents office.

### *Dramatis Personae:*

SUPERINTENDENT CLOSE, a human weather vane.

PROFESSOR JONES, high school principal and keeper of the educational seal.

JULIUS PARSONS, a hardy annual member of School Board, and watch dog of money chest.

SAMUEL LEFTEAR, member of board who hopes for higher and more lucrative political job.

JULIA SHARP, newly elected reform member. Swept into office on slogan, "Where is the Hitch?"

AUGUSTUS PINKHAM, PH. D., state agent for Vocational Education who stood highest in Civil Service list.

### FIRST ACT

*Mr. Close:* We are assembled today to hear Dr. Pinkham's views on vocational education in Spunkville. In order that we might have the benefit of Professor Jones's long experience in educational matters, I have taken liberty of inviting him. (No objection raised) (Mr. Jones thereupon matches accurately the tips of his fingers with elbows on chairarms). However, before calling upon Dr. Pinkham I wish to impress upon this honorable body that I have always been mindful of the interests of our schools....\*I have always felt that the pen was mightier than the sword and that the boy of today is the man of tomorrow.....that knowledge is the key to unlook the door of ignorance.....Great changes are taking place in our body politic and the schools must follow conservatively.....I call upon Dr. Pinkham.

*Julius Parsons:* Before hearing from Dr. Pinkham, I wish to acquaint him and our new member, Miss Sharp, with facts

\*NOTE: Reader is to supply stock phrases wherever .....occurs

and figures. They never lie.....Our school population has increased.....taxable property.....increased taxes.....new bridge.....where will it end.....Some point call a halt.....last bill for pencils shows 125% increase.....Book learning comes first.....Fads galore...

*Professor Jones:* If I may be pardoned for speaking at this moment, but the honor and confidence implied by your invitation predicates the probability that you are vitally obligated to a full consideration of the magnitude of determining the prerequisites of secondary education with its functional standards of coordination with the best traditions of our beloved high school.....we must make *men* and not *mechanics*, and *lives*, not *livelihoods*.....

*Julia Sharp:* I thought that we were here to listen to Dr. Pinkham.

*Dr. Pinkham:* It is indeed a pleasure to be in a city where the good work of your schools echoes even to the state Capitol. Your superintendent showed me this morning the oldest church, pointed out the tablet which marks the

first town dwelling, and exhibited the school desk on which your famous townsman, Senator Buckeye, carved his boyish monogram. . . . I have examined your manual arts. It has a variety of expressions and admirably functions with the home, play, and community life. But this work, good as it is, is *not* vocational education. The tools, teachers, projects, and boys are not unlike that which I shall mention later under the head of the vocational movement, but the purpose of the work being educational precludes any possibility of its being vocational. . . . In order to receive state aid you must organize a distinct department in school which has for its fundamental purpose. . . . profitable employment. . . . chosen occupation. . . . six hours a day. . . . one half of a day for approved shop and rest. . . . teacher full time. . . . skilled mechanic. . . . normal graduate not suited. . . . useful product only. . . . shop English, shop history, shop mathematics, shop hygiene, shop methods, shop vocabulary. . . . Equipment used nights only for students who elect in the evening only that work which relates absolutely to their daily employment. . . .

*Julius Parsons:* What is the expense? You recall I said. . . .

*Dr. Pinkham:* The products of Spunkville are textiles and machine products. You will need textile machinery, a machine, pattern and foundry shop, a drawing room for textile and machine design. Teachers from the trade may be obtained on salary \$1800—\$3000. They must have had five years of shop experience in supervisory factory positions. The state will re-imburse you for one-half of the salary. The control of local school is yours, absolutely, except in so far as it relates to teacher qualifications, courses of study, qualifications of pupils, output of shops and minor details. . . .

*Professor Jones:* (who still holds his

benign expression and his finger tipping). How does your proposal function with our present courses? I assume that these boys expect a diploma. . . . Requirements are four years of English, two years of mathematics, two years of history, two years of a language other than English, and a choice of electives totalling sixty points. What do you mean by shop English, shop mathematics, and shop history? . . . The boys need broad foundation of algebra and geometry. . . . fundamental principles. . . . culture. . . . theory. . . . college entrance. . . . too early to choose. . . . protest against undemocratic segregation of our youth. . . . Those who are to work with their hands should be sitting side by side with those who are to work with their heads. . . . Future mechanics should rub elbows with our future statesmen. . . .

*Superintendent Close:* The schools must be liberally conservative in their interpretation of the new spirit of civilization, and conservatively liberal in their appropriations to furnish means for such expression. The present restlessness in educational thought, while most unfortunate, is indicative of general social unrest. . . . The schools must stand in this period of transition between war and peace on the bed rock of solidarity. . . .

*Miss Sharp:* I am a new member, product of your schools, a pupil of Professor Jones. I know nothing about vocational education in its technical aspects. I care little about ancient history of town finances. This town has money for movies, for road contracts, for politicians, for poor farms, and county institutions, and for a college preparatory course for the eight members of the last graduating class who entered college. . . . I am concerned with the culls which the selective process in the school system discards. . . . I am interested in the mill girls and the factory boys. . . . the young

men who are paying for correspondence instruction . . . the boys who hang around the corner nights . . . more and higher grade industries in this village . . . jobs rather than credits . . . English for appreciation and history for citizenship . . . removal of adult illiteracy . . . classes for for housewives . . . extension of manual and household training . . . I hear nothing here but rules, regulations, appropriations, credits, qualifications, and what we cannot do . . .

*Dr. Pinkham:* I will send you Bulletin No. 41A, 49C, and 54X which outlines in detail the necessary procedure . . .

*Samuel Leftear:* I move that we extend

Dr. Pinkham a vote of thanks for coming to us and that a special committee be appointed to consider this important question.

*One Month Later*

School Committee Rooms,  
Spunkville, U. S. A.

Dr. Pinkham,  
State Capitol, U. S. A.

Dear Sir: At a meeting of the school board held last evening it was voted with one dissenting vote, only, to postpone indefinitely any action on a state-aided vocational school.

Yours respectfully,

SAMUEL LEFTEAR, Sec'y.

## WASHINGTON CORRESPONDENCE

### EQUALIZING EDUCATIONAL OPPORTUNITY

I HAVE been thinking a good deal recently about the disparity of educational opportunity in the different states and in the different sections of different states. The question received considerable emphasis at the National Citizens Conference on Education held in Washington last May, and has received much attention since that time. The state at the head of the list spends for each child in school seven times as much annually as the state at the foot of the list, and some of the states make an even more disproportionate distinction between the progressive communities and the backward districts.

### APPLICATION TO MANUAL TRAINING

IT WOULD indeed be an enormous task for some autocratic power to raise the quality of general education received by every boy and girl in the elementary schools of all the states up to what the best states are now aiming at as minimum standards, not to speak of the ideal con-

ditions toward which the educational reformers are striving. Even the lesser of these goals is so far ahead of us that its suggestion as a goal seems almost chimerical. Without considering music, physical instruction and properly directed play, nature study and elementary science, of which so many children receive so little that is worth while, think of what it would mean to give to every boy and girl of elementary school age in the United States from 30 to 90 minutes per week of efficient and purposeful instruction in handwork!

There are not enough teachers to do the job, and there is nothing to justify the hope that there will be at any time in the near future.

To keep in touch with this problem, and to understand something of the need, it is necessary to get away occasionally from the centers of population and visit some of the neglected schools. Much of the literature which you and I read seems to assume that the reader is working in a school located just around the corner from a hugh furniture factory, or just



across the tracks from the railroad shops or a big automobile factory, or something of the kind. In some of the large industrial centers these conditions do exist, and it has been possible to offer instruction, and even to provide the teachers with textbooks, for most of the important occupations in both trade and industry. We can just see the dust of the leaders ahead as they begin to give out courses for the training of foremen and executives, and begin to tackle the problem of training for foreign trade!

#### A BACKWARD STATE EDUCATIONALLY

**T**HIS is all very encouraging and hopeful, but there is another field which I hope we shall not neglect. I have just returned from visits to two counties in North Carolina, with my mind full of impressions of this other field.

North Carolina, as everybody knows, is either the last or almost the last of the states in every list showing the various phases of educational activity. There are substantial reasons for her record in this respect, but I have not time to go into them. This state, with others, was set back fifty years or more by the devastation of war, and until recently has not had the resources with which to develop her schools, tho conditions are now changing rapidly.

The errand that took me to North Carolina was the survey of the public schools of Elizabeth City, a town of about 10,000 population, and of Pasquotank County. The population of Elizabeth City has increased but a few hundred since 1910. The town has had graded schools only since 1907. In the county we found one consolidated school with seven teachers, but for the most part there are one-teacher schools, with a six or seven months' term. We passed several schools that have not opened this year because no one can be found who

will teach for the compensation offered.

Just before returning to Washington, Mr. Deffenbaugh and I went down to Manteo, on Roanoke Island, to talk to the teachers of Dare County. Here is a county without a single mile of railroad, the nearest station being Elizabeth City, about 50 miles by water from the county seat at Manteo. More than half of the area of the county is under water, and a considerable portion consists of the sand banks stretching northward from Cape Hatteras. There are nine school districts in Dare County in which there is not so much as a blade of grass growing. There is not a single farmer in the county. The population is made up of the families of fishermen, coast guard employees, and small storekeepers. Transportation is exclusively by water, since the entire county is cut off from the mainland, and practically no one lives back in the interior, away from the water.

#### A ONE-INDUSTRY COUNTY

**I**N numbers of these school districts there is no property to tax for the support of schools except the cottages of the fishermen and the coast guard folk, and consequently there is almost nothing to add to the funds which come from the state treasury to guarantee a minimum of six months' instruction in the common branches. Miss Mabel Evans, the county superintendent, told us it is almost impossible to induce residents of the county to teach school there. Those who are willing to teach go elsewhere. Those who come in from the outside to teach are practically marooned while there because of the isolation. One teacher from the southern part of the county started on a mail boat at 5 o'clock in the morning in order to reach Manteo at 7:30 in the evening, to be at the teachers' meeting at 8. It will take several of the teachers three days' travel each way to go to

their homes for Christmas in nearby Tennessee and West Virginia.

Here is a one-industry county, surely. In the adjacent waters of Albemarle and Pamlico Sounds are caught the finest shad and herring in the world, besides large quantities of oysters, shell fish, and diamond back terrapin. Most of this product is taken to Elizabeth City by boat, and from thence shipped north by rail. During the season as many as 25 car-loads of shad leave Elizabeth City in a single day.

The ocean front of North Carolina is the most dangerous portion of the Atlantic coast. Every five miles there is a station of the coast guard, each station having a crew of at least ten men, with their families. The sand banks, which stretch up and down the coast for a good part of the North Carolina shore, are situated from two or three to 15 miles from the mainland, and vary in width from a half mile to six or eight miles. In many places picturesque sand dunes, up to 50 or 60 feet high, are continually shifting back and forth. We were shown one place where a three-story hotel lies completely buried under the sand.

#### WHAT OF THE CHILDREN?

I CANNOT take the space this time to refer to the historical associations of these interesting places. There is much to tell. Perhaps what I saw would not impress you the way it did me, but I came away anxious to know what we can do to help bring it about that boys and girls in these and other out-of-the-way places may have better educational advantages. It should be possible somehow to provide, even for such places, teachers who could do something worth while in making and repairing sails, nets, and seines; in boat building and repairing, and gas engines; in gardening, elementary agriculture, and the rearing of domestic animals and poultry; in making and repairing clothing, preparation of food, and homemaking; as well as giving instruction in the three R's.

A new school and new teachers are needed. Should not some of us feel more responsibility for working on this problem? What can we do, without delaying progress along other lines.

WILLIAM T. BAWDEN

## IN FOREIGN COUNTRIES

### TO RAISE THE EDUCATIONAL STANDARD OF MANUAL TRAINING TEACHERS

FROM the American standpoint the standard of preparation of handicraft teachers in Great Britain has been very low on the professional and academic sides, tho very good on the practical side, if we may speak of such preparation as three-sided. It has been a surprise to many Americans that the leading school for handicraft teachers in London, The Shoreditch Technical Institute, has been of secondary school grade rather than of college grade. Americans have been surprised, also, that the "Center system,"

which tends to keep the manual training instruction too much separated from the other activities of the school, should have continued to be almost universal in England. It is, therefore, a real satisfaction to learn that the Board of Education has taken up these matters and sent out a circular, a large part of which follows:

1. In Circular 1161, which was issued to local education authorities on May 19 last, the Board stated that in their view the ideal method of arranging for practical instruction in elementary schools for the purpose of Section 2 (1) of the Education Act, 1918, would be to provide workrooms for all types of practical work within the premises

of each school, with instruction given by members of the staff possessing special aptitude for the work. The circular further stated that the Board look forward to the time when all teachers of practical work will be in the fullest sense members of the school staff, and that they hope that in the majority of cases such teachers will possess, or will take steps to obtain, qualifications under Schedule I. of the Code as Certified Teachers. The Board are aware that this ideal can only be realized by very gradual steps, and that for many years to come instruction will continue to be given in handicraft centres. Since, however, the work of these centres will be brought into increasingly closer relation with that of the contributing schools, the same principles apply as to the calibre and qualifications of the centre staff. The Board now desire to supplement this general statement of their policy by a further indication of the steps which they propose to take in the immediate future as to the recognition of teachers of handicraft.

2. It is at present required that a teacher of handicraft in public elementary schools must either hold a diploma recognized by the Board or must have been specially approved by the Board. The diplomas recognized by the Board for this purpose are either the Teacher's Certificate in Manual Training (woodwork or metalwork) issued by the City and Guilds of London Institute, or the Teacher's Certificate in Woodwork or Metalwork issued by the Board of Examinations for Educational Handwork. No evidence as to the satisfactory completion of a course of general education has up to the present been required by the Code from applicants for recognition as handicraft teachers.

3. The Board now propose to lay down that persons who apply to be recognized as handicraft teachers in public elementary schools after January 1, 1921, and who have not obtained a recognized diploma or been specially approved by the Board before that date, will only be recognized as teachers of handicraft on condition that, besides obtaining a recognized diploma in handicraft or otherwise satisfying the Board as to their competence in the subject, they are qualified for recognition either as certificated teachers or as uncertificated teachers under the Code.

4. The Board regard it as desirable that candidates intending to qualify as teachers of handicraft should in future generally enter the profession by first passing either the preliminary examination for the certificate or one of the approved first examinations for secondary schools, and then following a two years' course of training which would com-

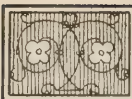
bine work in handicraft with a course in academic and professional subjects wide enough in scope and advanced enough in standard to enable the Board to recognize candidates who have passed thru it satisfactorily as college-trained certificated teachers. Courses of training of this kind have recently been established by the London County Council at the Shoreditch Technical Institute and by the Ministry of Labour for ex-Service men at Sarisbury Court, and the Board hope that other courses of training of this kind will be set up elsewhere either in new training colleges or in colleges already existing.

5. Candidates for recognition as teachers of handicraft who are not in a position to avail themselves of these facilities will be required at least to obtain recognition as uncertificated teachers under the Code before being recognized by the Board as handicraft teachers, and if they desire to remain permanently in the teaching profession it is, in the Boards' view, advisable that they should qualify themselves for recognition as certificated teachers within a certain number of years, either by proceeding to a course of training or by passing the certificate examination of the Board for acting teachers. The Board may in future think it desirable to lay down a regulation providing that persons teaching handicraft who do not qualify for recognition as certificated teachers by a given time or by a given age may cease to be recognized by the Board as teachers of handicraft.

6. The Board have under consideration the question of introducing modifications into the syllabus of the preliminary examination for the certificate and of the certificate examination of such a nature as will, without lowering the general standard of these examinations, render them more suitable for the special requirements of handicraft teachers.

7. Persons who have been recognized as teachers of handicraft before January 1, 1921, in virtue of the possession of a diploma in the subject, or who have been specially approved by the Board before that date under paragraph 9 will continue to be recognized as teachers of handicraft, altho they may not satisfy the conditions prescribed above. The Board, however, hope that such teachers will, whenever possible, improve their qualifications by obtaining recognition either as certificated teachers or as uncertificated teachers, and by securing a diploma in handicraft if they do not already possess one. They hope also that local education authorities will give facilities to such teachers to improve their qualifications by the provision of short courses or in other ways.





## PROJECTS, PROBLEMS AND NOTES



### THE SCREWDRIVER THAT WILL STAND

**I**N my experience as a manufacturer of tools I have forged and tempered many thousand dozen screwdrivers that were sold under a guarantee of satisfaction, and the returned goods were not many; so I feel qualified to write this article.

Making good tools is like the housewife making good bread: she must have good flour, and the tool maker must have good steel to make tools that will stand, and he must know something of the nature of the steel he is going to work. Therefore I would advise getting the steel direct from the manufacturer when possible, as there are at the present time many grades of tool steel that require many different methods of treatments. At the time I started to learn tool-making, we used the same grade of steel for all the tools we made (with the exception of mill picks. For these we used silver steel, which was high in carbon): axes, hatchets, draw shaves, wood chisels, pruning shears, cleavers, butcher and carving knives, hedge trimmers, corn knives, corn hooks, grass hooks, stone tools, cold chisels, drift punches, carving tools, etc.

For all the above tools we used steel that ran from 60 to 80 point carbon, but today we have a grade of carbon tool steel rolled to a special analysis for nearly every different tool.

At the teachers convention held in Grand Rapids, Mich., October 28th and 29th, I had a long talk with a man who has for many years been instructor in forge work and he stated he was not sure of the results when he dressed and tempered a screwdriver, and this talk has prompted me to write this article on making the screwdriver.

A good grade of crucible spring steel is best, altho tool steel will make a good screwdriver. One-fourth inch,  $\frac{5}{16}$ ", and  $\frac{3}{8}$ " round stock are the sizes most commonly used. The end of the blade made from  $\frac{1}{4}$ " stock may be  $\frac{3}{16}$  or  $\frac{1}{4}$ " wide, and of the  $\frac{5}{16}$  stock,  $\frac{5}{16}$  or  $\frac{3}{8}$ " wide and of the  $\frac{3}{8}$  stock  $\frac{3}{8}$  or  $\frac{1}{2}$ " wide, these three sizes of steel will draw about the same when forging the blade and shank and will increase in length about  $1\frac{1}{2}$ ", this will allow for the shank to drive into the handle.

To make this a little plainer the stock for a 6" blade should be  $7\frac{1}{2}$ " long; make the same allowance for all lengths. First bear in mind that a screwdriver is subjected to more misuse than any other tool on the market. I have frequently seen them used for the following purposes: when a screw refuses to turn, and after the best grip the man has is tried and found wanting, he usually takes a monkey wrench or a pair of pliers, grips the flat

part of the blade and turns the screw, splits the head or breaks the driver. It is also used to pull nails, for drift punch, cold chisel, pry bar, and for scraping gaskets, carbon, etc.

This means we must use tough steel and exercise special care in heating, forging and tempering. First forge the shank for the handle; this is the  $1\frac{1}{2}$ " you allowed for this purpose.

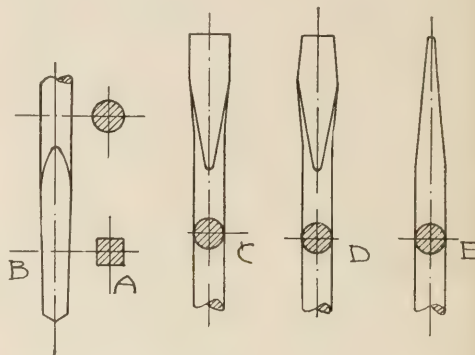


FIG. 1

Heat to a bright red and hammer to a square, make the corners sharp as in A, Fig. 1, and taper as in B, about  $\frac{1}{16}$ ".

A square shank driven into a hard wood handle with ferrule will not turn, the hole drilled in the handle should be the same as the flat diameter of the shank.

Now we are ready for the blade: Heat to a bright red and be sure you give it time to heat clear thru. Use a slow blast and a good body of fire. Do not poke the steel down into the fire bed, but force it down into the coals where you can see when it comes to a bright red. (Spring or tool steel of 60 point carbon, or more, will not stand burying in the fire) when you have the proper heat, forge with light hammer on the face of the anvil. After you have hammered the two flat sides until they are like C, Fig. 1, heat and forge the edges with two light blows; then turn and strike two similar blows on the flat sides; turn the steel so you hammer all four sides about equal; and when you have it to about  $\frac{3}{32}$ " on the end and shaped as in D, and a taper like E, again heat to cherry red, dip your hammer in water and hammer the end down to  $\frac{1}{16}$ ". This water hammering raises the scale, closes the pores, packs and toughens the steel. Repeat this operation with light blows on the flat sides, heat and file to shape, allowing the steel to cool

while filing. *Do not* file crosswise of the blade, draw-filing is best; and *do not* cool in the water. *Do Not* file too thin back from the point, and the point should not be filed thinner than the slot in the screw.

You are now ready to harden. Heat to a low cherry red, giving at least five minutes to come to this heat, hold perpendicular, and dip down about  $\frac{1}{4}$ " in clear water with the chill off. Rain water is best. Move the blade up and down about  $\frac{1}{8}$ " to avoid a water line. When the blade is cooled back about  $\frac{1}{2}$ ", allow the moisture to dry; then brighten the flat side of the blade with sandpaper, emery cloth, or I prefer sand stone, as with the use of this the temper colors are brighter and more distinct. There should be heat enough in the thick part of the blade to draw the temper. You will notice the bright side begins to change to a straw color, then brass, copper, dark blue, sky blue, and last a faded blue with a tinge of pink. When this color reaches the point cool in oil—machine oil is o k if you have it, or kerosene is good.

Here I want to give you the recipe for tempering a screwdriver as handed to me by an old tool maker, and I think one of the best I ever worked with. He said, "Harden the blade, draw all the temper out, and you have a good screwdriver." And he was pretty nearly right, as there should not be much temper left.

A few days ago I had this question asked me: "Do manufacturers use good steel for screwdrivers," I answered, "yes, most of them."

This party then asked, "Why don't they stand?" I explained I had dressed many used screwdrivers and seldom found one that would not stand when properly dressed and tempered. Now to dress a used screwdriver, if it has been broken, heat the blade and file or grind about  $\frac{1}{8}$ " off or until it is straight across the bit as in D, Fig. 1, water hammer at a cherry red, taking care to strike about the same number of blows on each side. When thru hammering look it over carefully for cracks as you cannot tell what the other fellow did to it. If no cracks are found draw-file as on the new one, harden and temper the same. You can heat the bit and dress without removing the handle. If the blade is short, push it thru a small potato, this will protect the handle. C. O. Hudson.

#### WHEN TO HEAT WOOD BEFORE GLUING

**W**HETHER a hide glue joint will be strengthened or weakened by heating the wood before gluing depends on the size of the joint. It is assumed, of course, that the work is being done in a glue room that is warm and not draughty, and that the wood itself is at room temperature. Under

these conditions, if the joint to be made is of small area, heating the wood is unnecessary. In fact it may be detrimental, for the warmth of the wood will keep the glue thin; and, when pressure is applied, too much glue may squeeze out, leaving a starved joint. It is very easy to apply too much pressure to a small area.

In making glue joints of large size (several inches each way), heating the wood before gluing is of distinct advantage. Many experiments at the Forest Products Laboratory, Madison, Wis., have proved that when the wood in large joint work is not heated, the joints develop full strength only in spots. Weak spots and even open joints are too frequently discovered.

Uniform high strength in joints of large size may be secured by heating the wood in a hot-box for 10 or 15 minutes at 120 to 130 degrees Fahrenheit just before gluing. The heat from the wood prevents the glue from chilling and keeps it liquid until pressure is applied.

It should be remembered that heating the wood retards the setting of the glue to some extent. In heavy woods, from which the heat escapes slowly, this retarding effect is more marked than in lighter woods. In all species glued cold at the Laboratory the time under pressure required to develop full joint strength was less than 8 hours. When heated wood was used, at least 10 hours were required to develop full joint strength in mahogany, and more than 12 hours in red oak and maple.

—FOREST PRODUCTS LABORATORY.

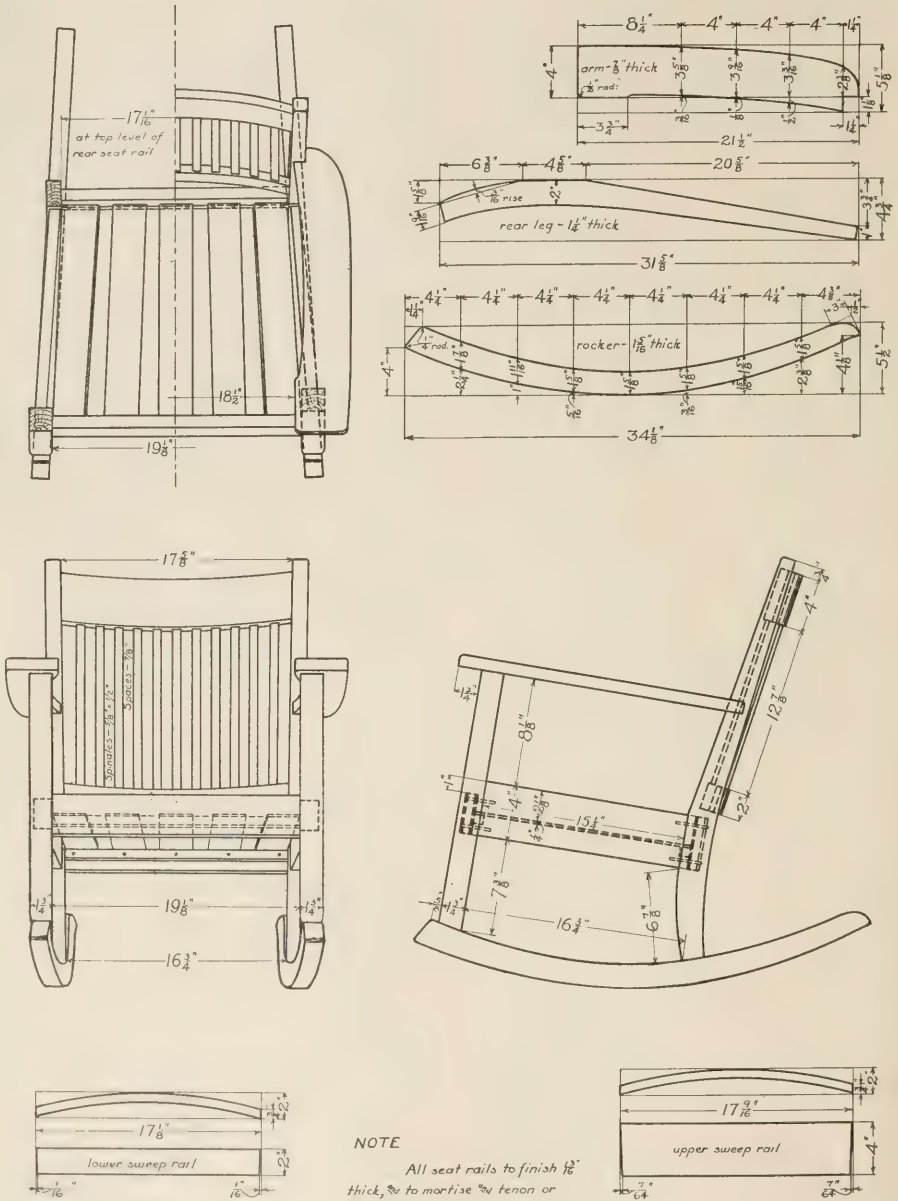
#### ROCKING CHAIR

**T**HE design of a chair offers many interesting problems in construction, and should involve a study of the elements of comfort in its use. One need not be a connoisseur to appreciate the restful feeling possible with the use of certain types of chairs, and it may be stated that the design offered herewith represents a careful study of that feature as well as of firm construction.

A vocational instructor will appreciate the nature and variety of joinery problems suggested by this particular design and will undoubtedly be fully as appreciative of the chair after these problems have been satisfactorily worked out and the chair has been tried out.

The mortise-and-tenon construction of the front legs and rail offers the only square joints in the chair. The skew joints to be found in the side, back and sweep rails may be readily developed by a preliminary layout from the dimensions furnished. The two sweep rails for the back may be sawed from a 2" plank or they may be built up of sorrento stock and bent around a form. The latter method is

# MISSION ROCKING CHAIR



## NOTE

All seat rails to finish 1/2" thick, & to mortise & tenon or dowel into the center of face of legs as met with. Sweep rails also meet centers of leg faces.







the more desirable since the grain of the wood in the rails will increase their strength beyond the point possible with the sawed rail.

The best results in the construction will be secured if the front legs and rail are first glued and finished; if the entire back unit is then completed and the side rails then fitted and doweled into place in front and back legs. If more than one chair may be made in a class it would prove an economy of time to make cardboard or sorrento stock templates of all irregular pieces in the chair. The back end of the arms should be carefully fitted around the back legs, then 3" screws put into the end thru the back of the leg, after which the holes should be carefully filled with a plankwise plug. The rockers should be attached to ends of legs with a  $\frac{3}{8}$ " dowel and 3" screw in each case.

—FRANCIS L. BAIN.

### FOOTSTOOL

Mr. Editor:

I am sending a drawing of a footstool, made here last year. I made the first one for the domestic science teacher. It was placed in the shop, without comments, and it attracted the interest of two boys. Three more were made at once. Accuracy is necessary in its construction.

The top is to be covered with leather or tapestry to match the furniture in the room. The handle (A) makes a convenient way of picking it up, and the designs can be easily changed. The first one was made of birch and given a mahogany finish.

—E. F. JUERGENS,  
Middletown, Ohio

### SHELLAC CONTAINER PAN

THE shellac container pan is a good sheet-metal problem and when the object is completed it becomes a piece of equipment very much needed in most school shops. The drawing shown herewith was made from blueprints that came from Cleveland, Ohio, where this problem has been worked out in the shops of the public schools.

### AN UPHOLSTERY PROBLEM

*Question:* Will you please tell me how much tow to order for the construction of a pad seat, 21" x 26" x 4"? Would a piece of imitation leather 31" x 36" be sufficient for covering?—L. J. M.

*Answer:* I presume that you have reference to such a seat as is described in "Furniture Upholstery for Schools," pages 38-46. It will take at least 6 lbs. of tow to have enough for the proper double stuffing.

For the outside cover you will have to figure 7" on each side of the frame to reach down and under the frame. You must then figure 45" x 50", and as the goods come in 52" widths you will need  $1\frac{1}{3}$  yds. in the piece.

—E. A. JOHNSON.

### LACQUER FOR COPPER

*Question:* Could you give me any information in regard to the formula that is used in dipping copper to keep it from tarnishing? I surely would appreciate any information that you could give me in regard to this matter.—H. W. K

*Answer:* See Chapter VI in "Art Metalwork" by Payne. This gives quite complete information on this subject. On p. 48 Professor Payne gives the following:

"Banana oil, sometimes called bronzing liquid, makes a fairly good lacquer for our purpose, and it has the decided advantage of being obtainable in almost any drug store."

### WEIGHT OF EBONY

*Question.* Would you kindly tell me whether *lignumvitae* is heavier than ebony?—J. J. A.

*Answer.* The name ebony is given to several woods whose heart-wood is distinguished by their dark color and hardness. The most valuable is *Diospyros Ebenum*, native of Ceylon and Southern India, but there is a "green ebony" that comes from the island of Jamaica, a "brown ebony" from British Guiana, and several other varieties.

Professor Snow in *The Principal Species of Wood* gives the weight of seasoned *lignumvitae* as 71 pounds per cubic foot. Boulgar in *Wood* gives it as from 60 to 83 pounds per cubic foot. Boulgar gives the weight of Ceylon Ebony as 70 or more pounds per cubic foot, but the heartwood he says is from 75 to 80 pounds per cubic foot.

It is evident that the woods known by the names *lignumvitae* and ebony vary considerably in weight. The highest maximum seems to be attributed to *lignumvitae*.



## CURRENT PUBLICATIONS

*Junior Wage Earners.* By Anna Y. Reed, director of the Junior Division of the U. S. Employment Service, Department of Labor, Washington, D. C., assisted by Wilson Woelpper, director of planning and statistics in the same Division. The Macmillan Company, 1920. Size 5 x 7½ in.; 171 pages,

Anyone interested in vocational and educational guidance or in placement problems will find in this volume much summarized data on vocational guidance and a statement of the aims, policy and methods of the junior division of the United States employment service. The book contains several charts and tables by way of illustration.

*Elementary Machine Shop Practice.* By T. J. Palmateer, instructor in machine shop practice, Stanford University. The Manual Arts Press, Peoria, Illinois, 1920. Size, 5¼ x 7¾ in. 123 pages; price, \$1.50.

This is a textbook for the use of students in machine shop classes. It is the result of experience in teaching and practical work as a machinist. The subject is treated under the following heads: Vise work, shaper work, drilling, taps and dies, lathe work, lathe and shaper tools and milling machine work. The material for the book has been very carefully selected with the idea of giving the essentials in convenient and readable form. The conscious effort of the author has been to make a condensed but effective text to supplement the instruction given by the teacher. The book includes a course of problems, but may be used with any course covering the fundamentals of the subject. It contains a good index.

*The Magic Voice.* By Florence Crocker Comfort. A one-act play in the interests of better speech. Published by the Prang Company. Price, 50 cents.

This is a successful application of the art of play-writing in a field where it is much needed. It ought to be welcomed among many teachers.

*Shop Mathematics.* By Erik Oberg and Franklin D. Jones. Published by the Industrial Press, New York, N. Y., 1920. Size 6 x 9 in.; 280 pages.

This is a treatise on applied mathematics dealing with various machine shop and tool-room problems, and containing numerous examples illustrating their source and the practical application of useful rules and formulas. It is published primarily for industrial workers and for students in shopwork.

*Educational Toys.* By Louis C. Petersen, director of manual arts, State Normal University, Carbondale, Illinois. The Manual Arts Press, Peoria, Ill., 1920. Size, 6¾ x 10 in.; 114 pages; price, \$1.80.

This book is a collection of full-size drawings of toys that have proven to be interesting to children

to make, and profitable from the educational standpoint. It is illustrated with photographs of the completed toys. In addition to the drawings and photographs, the book gives suggestions about making each of the toys, and general directions about tools, woods, transferring designs, laying out work, sawing, fastening parts together, and coloring the toys. Most of them may be made with the coping-saw as the principal cutting tool.

This collection of toy designs appeals strongly to the child's mechanical ingenuity, and to his sense of humor. A child who makes these animals, human figures and queer mechanical contrivances does, in fact, produce a jolly company of playthings. The author's primary aim, however, is educational.

### RECEIVED

*The Eye-sight of School Children.* By J. H. Berckowitz. Bulletin No. 65, 1919. Issued by the U. S. Bureau of Education, Washington, D. C.

*The National Crisis in Education.* Report of the proceedings of the National Citizens' Conference on Education called by the U. S. Commissioner of Education, and held in Washington, May 19 to 21, 1920. Edited by William T. Bawden. Bulletin No. 29, 1920. Issued by the U. S. Bureau of Education.

*Requirements for the Bachelor's Degree.* By Walton C. John. Bulletin No. 7, 1920. Issued by the U. S. Bureau of Education.

*Agricultural and Mechanical Colleges,* including Statistics for 1917-18. By Walton C. John. Bulletin No. 8, 1920. Issued by the U. S. Bureau of Education.

*Re-organization of Science in Secondary Schools.* A report of the commission on the reorganization of secondary education appointed by the National Education Association. Bulletin No. 26, 1920, published by the U. S. Bureau of Education.

*Salaries in Universities and Colleges in 1920.* Bulletin No. 20, 1920. Issued by the U. S. Bureau of Education.

*High Schools.* Twenty-first and twenty-second Annual Reports of the Superintendent of Schools, New York City. This section of the superintendent's report gives considerable space to the report of the director of art, Dr. James P. Haney.

*Further Steps in Teaching Health.* An illustrated bulletin issued by the Bureau of Education, Washington, D. C.

*Home Laundering.* By Lydia Ray Balderston, Teachers College, New York City. An illustrated bulletin of 32 pages issued by the U. S. Department of Agriculture.

# Steady Rapid Drilling

Straight into the metal goes the bit, cutting fast and continuously. No need to stop every few turns for hand feeding. No slowing down; the "Yankee" Automatic Feed takes care of drill points.

The "Yankee" Chain Drill works with machine-like ease and precision. All you have to do is turn the brace.

## "YANKEE" Chain Drill

With the Automatic Friction  
and Ratchet Feeds

In operation, Friction Feed quickly runs drill down to work. A touch of the shift lever throws the Ratchet Feed into play—and the drill moves steadily through the cut. Feeding is automatic.



## "YANKEE" TOOLS

*Make Better Mechanics*

**No. 1500.** 3-jaw chuck for round shank drills up to  $\frac{1}{2}$  in. Length  $9\frac{3}{4}$  in. Weight  $3\frac{3}{4}$  lbs.

**No. 500.** 2-jaw chuck for square shank drills up to  $\frac{1}{2}$  in. Length  $10\frac{3}{4}$  in. Weight  $3\frac{1}{2}$  lbs.



### FREE! YANKEE TOOL BOOK

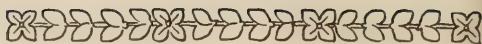
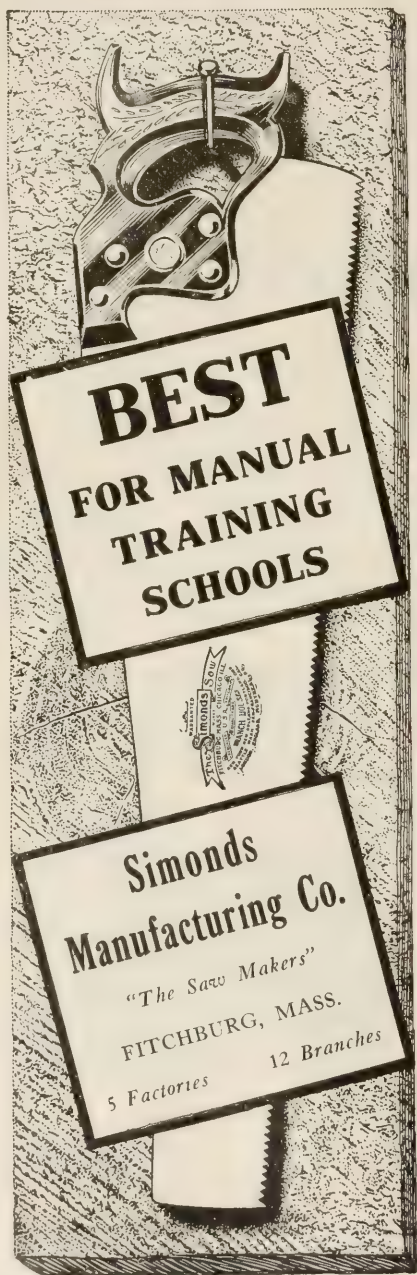
A workman is known by the tools he uses. Careful workmen use "Yankee" Tools. That's just why you should know all about them. The "Yankee" Tool Book gives valuable and interesting information about "Yankee" Tools and the way they accomplish unusual results. Write for it. It's FREE!



NORTH BROS. MFG. CO., Philadelphia



# SIMONDS SAWS



## FIELD NOTES—(Continued)

tional Education and by Miss Genevieve Fisher, L. H. Carris, F. G. Nichols and others. Topics such as "Industrial Rehabilitation," "The Fess Bill and Home Economics Teaching," "The Future of Commercial Education," and "What the Smith-Hughes Law has made Possible" will be of vital interest to everyone.

Informal dinners and luncheons, sightseeing tours to factories and schools and other points of interest, the extensive commercial exhibits with the very latest in the way of tools and equipment—all will contribute to make this the most important meeting ever held in the Middle West.

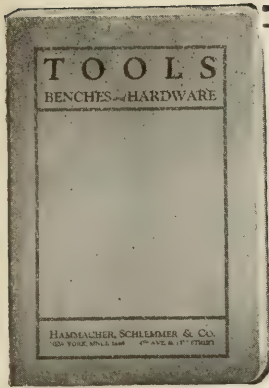
The Central Passenger Association has granted a rate of a fare and a third for the round trip, contingent upon the attendance of at least 500 delegates. That the attendance will be much greater than this is a foregone conclusion when the splendid program is considered. Everyone who has not already visited the metropolis of the great northwest has always planned to make this trip and see at first hand the splendid progress made in this section of the country. This is your opportunity. "Eventually, why not now." For further details and a copy of the final program apply to the secretary, Leonard W. Wahlstrom, 1711 Estes Ave., Chicago.

## CONTINUATION SCHOOL WORK IN PEORIA

PEORIA is one of the Illinois cities to establish continuation school work this year on a sound basis. The Board of Education, acting on the advice of the State Supervisor of Industrial Education, has decided to start right by securing the services of an experienced director of continuation school work. They have, therefore, employed R. R. Neely, formerly of Allentown, Pa. Mr. Neely is a graduate of the Pennsylvania State College with the degree of B. S. in mechanical engineering. After two years of practical experience in various departments of the New York Central Railroad locomotive repair shops he became the director of the State College engineering extension school at Allentown. This was in 1914. Since 1916 he has been principal of the Boys Continuation School of Allentown. He has supplemented his engineering course with special courses in continuation school subjects at the State College summer school, and for one summer he has been an instructor at the same college.

Concerning his new work in Peoria Mr. Neely says, "We are going to attempt to carry out our work along three very definite lines—vocational discovery, vocational training, and vocational placement.





# GOOD TOOLS

Are Essential For

## GOOD WORK

Since 1848 we have adhered to one policy.  
To handle only the very best in quality.

Our new Catalog No. 208 of over 300 pages is of particular value to those interested in VOCATIONAL TRAINING.  
Copy upon request.

**Hammacher Schlemmer & Co.**  
HARDWARE TOOLS AND SUPPLIES  
NEW YORK, Since 1848 4th Ave. and 13th St.

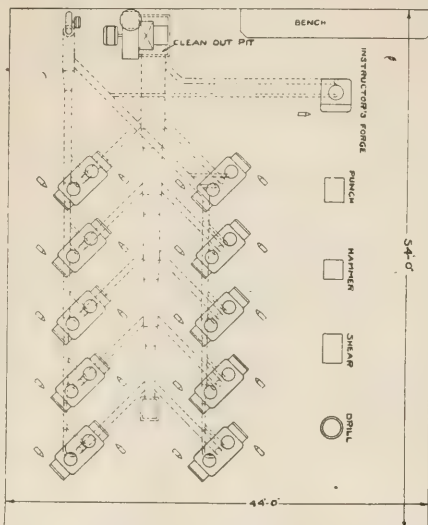


This is a view of Manual Training Department, South Milwaukee High School, South Milwaukee, Wis. The Wood Working Machinery was furnished by Oliver Machinery Co., Grand Rapids, Mich.

Let us acquaint you with our  
High Grade Wood Working Machinery.

OLIVER MACHINERY CO.  
Grand Rapids, Michigan, U. S. A.

Layout of Buffalo Double Down-Draft Forges



## Standard School Equipment

The Buffalo Forge Company are the inventors and sole manufacturers of the Down Draft Forge.

This forge returns the unconsumed gases for complete combustion. Recommended particularly for schools where gases and fumes must be removed because they frequently injure the students health.

Send for catalog 205-31 which contains notes on forge shop practice and modern equipment for schools of mechanical technology, etc.

**Buffalo Forge Company**  
Buffalo, N. Y.

*"Buffalo"*

## FIELD NOTES—(Continued)

"We are dividing the child's time in school (eight hours per week) equally between vocational courses and the so-called academic courses. Each child in the course of two years is to receive as varied a vocational experience—shop, office and laboratory courses—as conditions permit. The academic work is to be linked closely to his present and future needs, not only as a worker, but as a citizen. At the end of the first two years, after a careful study of the child's abilities, his desires and the demands of the community, he is to be placed in a special training course for the last two years.

"By development of the proposed plan of co-operation with the Junior Employment Service, Department of Labor, it is hoped to round out the complete plan—helping the child to find himself, affording him special training, and finally placing him in a promising job.

"As at present organized, the academic work includes arithmetic, civics, hygiene, geography, English and economics—all the material of these subjects to be allied to industrial and civic conditions. The vocational courses include stenography, typewriting, office routine, cooking, sewing, woodwork, metalwork, drawing, and design. Also, at the present time, we have organized a special training course in salesmanship.

"It is fully appreciated that, while very wonderful things may be proposed on paper, the practical results may be found to fall far short of fulfilling the original proposals. It is thought, however, that the foregoing plans are not visionary but possible of accomplishment."

## A FINE EXAMPLE OF COOPERATION

**I**N Southern California homes are not being built fast enough to supply the needs of a rapidly increasing population. According to newspaper report the people of San Pedro are organizing to increase home building. The community is focussing attention upon this special need. In the spirit of community cooperation the manual arts department of the high school is helping by offering assistance to any prospective home builder. Thomas Fellows, the instructor in architectural drawing, has announced that all who care to consult him on plans and specifications or to get help in general in the line of home building are welcome to call on him, and that no fees will be charged. He has designated the hours from 5 to 7 o'clock as the time he will receive such inquiries.

Furthermore, Mr. Fellows has about forty skilled mechanics—builders, carpenters, plumbers, concrete workers, etc.—who are taking his courses in

Our new trade mark !



## *Announcement*

THE purchase by The Stanley Works of the Stanley Rule and Level Company will enable us to serve you in the future even more efficiently than in the past.

For more than 70 years the two Stanley Companies have been building steadily towards one end—to make the name STANLEY a mark of dependable quality in

## *Wrought Steel Hardware and Carpenters' Tools*

A new trade mark as here shown has been established as the result of this merger.

The combined experience and facilities of these two great companies will hereafter be devoted to maintaining and increasing the service represented by the name STANLEY.

### **THE STANLEY WORKS**

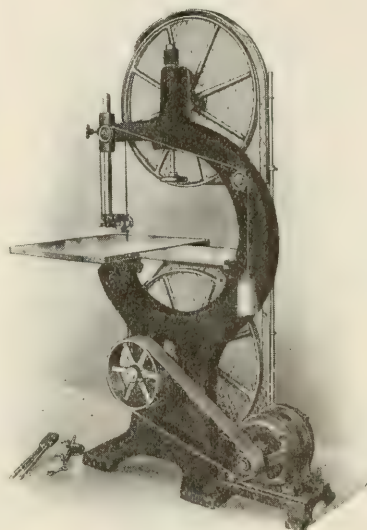
Main Offices and plants:  
NEW BRITAIN, CONN.

Branch Offices:  
New York    Chicago    San Francisco  
Los Angeles    Seattle

## EQUIP WITH



## Woodworking Machinery



**FAMOUS**  
36 Inch Wheel Band Saw

A STANDARD machine for commercial shop and one of our many machines especially suited to manual training needs. Motor driven, well guarded, accurate, and durable.

Fourteen thousand of these splendid band saws now in use.

---

Put your problems up to  
Our Engineering Division

---

*Ask for Catalog No. 20*

**THE SIDNEY TOOL CO.**  
Sidney, Ohio



# SHOP APRONS

*Guaranteed*

Adjustable  
Neck  
Strap

Saves  
Many  
Times  
Their Cost



**The Apron You Can Buy  
with Confidence**

Standard  
Equipment  
In the  
Best Schools  
Everywhere

Instructors Apron free with first order  
for one dozen.

Price, White 75c

Price, Brown 80c

Delivery Same Day

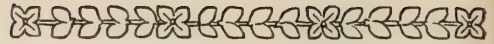
Send no money—Just your order to

**CANVAS PRODUCTS  
CORPORATION**

19-21-23-E. McWilliams St.

School Dept.

FOND DU LAC, WISCONSIN



## FIELD NOTES—(Continued)

architectural drafting. These men, also, have agreed to assist prospective home builders with their plans.

This is real community service, and incidentally the way to build up a school that will be cordially supported by the men and women who vote appropriations.

NATIONAL THRIFT WEEK, to be observed January 17-23, is a program of economic education to help the people of our country think straight about their money matters. Each day of this week is set aside to emphasize a special phase of thrift, as follows:

Monday, January 17, Benjamin Franklin's birthday, National Thrift Day or Bank Day.

Tuesday, January 18, Budget Day.

Wednesday, January 19, National Life Insurance Day.

Thursday, January 20, Own Your Own Home Day.

Friday, January 21, Make a Will Day.

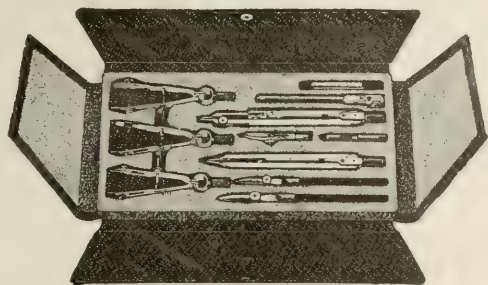
Saturday, January 22, Pay Your Bills Promptly Day.

Sunday, January 23, Share With Others Day.

Forty national organizations including the American Bankers Association, National Federation of Construction Industries, National Association of Real Estate Boards, National Association of Life Underwriters, Credit Men's National Association, etc., are cooperating with the National Thrift Week Committee.

TEACHERS COLLEGE, New York City, is offering an intensive course in administration of vocational education from Jan. 26th to Feb. 23rd, 1921. This is a new departure. The course will be conducted by Professor Arthur D. Dean. It is intended for men and women who cannot attend a summer session or a longer term during the regular school year. The program of the course is essentially a twenty-day round table plus a course of lectures by members of the College faculty and specialists from the field. This course is the result of correspondence with educators in different parts of the country. They agree that there is need for such an opportunity.

THE SOUTH DAKOTA Industrial Arts Association had a very interesting round table discussion during the recent S. D. E. A. session in Aberdeen. The leading topics of discussion centered around the teaching of grade woodwork. It is very evident that interest in manual arts subjects is rapidly increasing in South Dakota.



## U. S. DRAWING INSTRUMENTS

are the best for shop drawing.  
Can also supply Genuine Richter Instruments.  
Write and give requirements.

**U. S. BLUE-PRINT PAPER CO.**  
CHICAGO. - - ILLINOIS

### FIELD NOTES—(Continued)

THE DECATUR, ILL., school board voted on November 9 to establish part-time continuation schools about Feb. 1st, taking advantage of the "optional-mandatory" law. This makes fourteen cities in the state which have taken similar action.

WORD COMES from Anchorage, Alaska, that the boys in the manual training class are rejoicing over the arrival of a complete mechanical drawing equipment. Then follows the statement that the work in the new department "will now go on rapidly."

### PERSONAL ITEMS

DR. JOHN W. WITHERS, Superintendent of Public Schools, St. Louis, Missouri, has accepted the deanship of the School of Pedagogy of New York University to succeed Dr. Thomas M. Balliet, who was made professor emeritus in June, 1919. This new appointment brings to the oldest school of pedagogy in the United States a man who stands very high among the educators of the country. Dr. Withers was formerly head of the Harris Teachers College in St. Louis.

FOREST T. SELBY has left his position in teacher-training work in the state department at Raleigh, N. C., to become the supervisor of industrial and vocational education at Durham, N. C. The city of Durham has a big school problem on hand and the people of that city are desirous of building up an effective system of manual arts and vocational education. At the present time Mr. Selby is organizing work in vocational printing.

## TOOLS

For Manual Training Shops.  
Send your inquiries to and get the especially  
low prices quoted by

**MONTGOMERY & CO. Inc.,**  
105 Fulton Street New York City

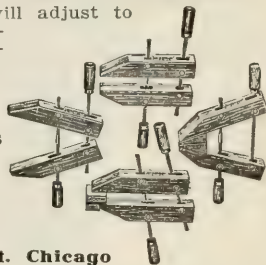
## "JORGENSEN" PEERLESS HAND SCREWS

A single clamp will adjust to  
any of these posi-  
tions or any modifi-  
cation of them.

Steel Spindles  
Steel Nuts  
Hard Maple Jaws

**Adjustable  
Clamp Co.**

216 N. Jefferson St. Chicago



## MONITE Waterproof Glue

THIS modern adhesive should be found in every school. CASEIN glue is endorsed by the Forest Products Laboratory and is recognized as the coming glue for every wood-working and pattern-making use. Every student should know that it is possible to prepare with cold water a glue that produces a joint which is water and heat proof, and yet has as great strength as the hot glues, without their disadvantages.

We have prepared a booklet for distribution that gives valuable information about the properties, uses and application of CASEIN glues. A request will bring it to you—with a generous working sample, if you wish.

**Casein Glue  
Manufacturing Co.**

136 West Lake Street  
Chicago, Ill.

# It's Just Off The Press CONCRETE WORK

VOLUME I

By **WILLIAM K. HATT**, C. E., Ph. D. Past-President, American Concrete Institute and  
**WALTER C. VOSS**, Master Builder,  
Boston, Massachusetts



W. K. HATT

A New  
**Wiley**  
Technical  
Series  
Book



W. C. VOSS

"Concrete Word" forms the basis for an entire course, giving the student complete plans and specifications for a building.

466 pages, 5 1-4 by 7 1-2—illustrated  
—\$4.00 Postpaid

Have You Seen

**PRACTICAL TRADE MATHEMATICS**

By **J. A. Moyer** and **C. H. Sampson**  
172 Pages—155 Figures—\$1.50 Postpaid  
It Is Making a Big Hit!

Send for *Free Examination* copies

John Wiley & Sons, Inc., 432 Fourth Ave.,  
N. Y. City.

You may send me the following on 10 days' approval:

**CONCRETE WORK**  
**PRACTICAL TRADE MATHEMATICS**

I agree to pay for the books or return them within 10 days of receipt.

Also please send me a copy of your Vocational News and put my name on your mailing list.

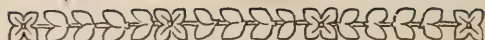
Name.....

School.....

Official Position.....

Address.....

MTM 1-21

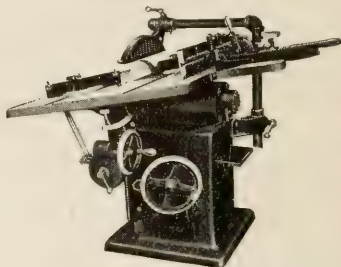


## PERSONAL ITEMS—(Continued)

MARK A. BARNEY has been selected as director of the New England Vocational School at Rutland, Massachusetts. Mr. Barney has served for several years as instructor in the Pattern Making Department of the Newton Vocational High School, where he has met with good success in his work. Mr. Barney brings to his new position a well-rounded experience, a pleasing personality, and a keen interest in the many problem of his new position. The splendid work which this institution has undertaken is becoming more and more appreciated among ex-service men, and the possibilities for Mr. Barney in his new work appear to be extremely interesting in a great many directions.

THE DIRECTORSHIP of the Cambridge, Mass., Continuation Schools has been merged with the position of assistant superintendent of schools in Cambridge. Mr. Herlihy, former assistant superintendent of schools in Cambridge, has resigned in order to associate himself with Americanization work under the direction of the Massachusetts Board of Education, and he is succeeded in his former position by Mr. Dugan, who will also administer the affairs of the continuation schools.

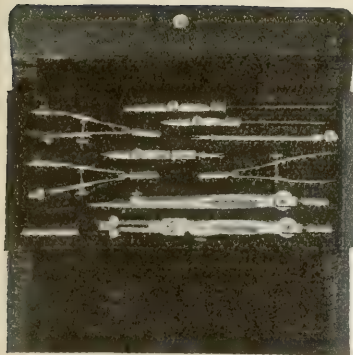
## TRADE NOTES



THE ABOVE ILLUSTRATION shows a saw bench with motor drive incorporated in the machine. The saw is mounted on the end of the motor arbor. This saves space, power and care of belts, hangers, pulleys and line shafting. In addition to this saving in these several ways it is rendered more safe for students to operate. The machine possesses several special features and can be supplied to meet varying electrical requirements. It is manufactured by The Tannewitz Works in Grand Rapids, Michigan, from whom complete information can be obtained.

TWO NEW LATHES which bid fair to become popular in junior high schools and prevocational schools are the new 9" and 11" lathes manufactured by the South Bend Lathe Works of South Bend, Indiana. They are of exactly the same design as the general line by this Company, are complete





## Mechanical Drawing Outfits

Set as Per Photo, \$6.65

We have only a limited number of sets to offer at the above price. Send in your order now—so you will get them at this price while they last. All solid nickel silver and steel construction. Save 200 per cent and order today.

**National Instrument Company**

4517 North Lawndale Ave. Dept. A. Chicago, Ill.

### TRADE NOTES—(Continued)

in every way and are recommended to meet the most accurate requirements. At the reasonable price at which these lathes are being sold it is possible to care for a number of boys at a comparatively small expense for equipment. The firm has recently put out a special catalog describing these lathes. It is entitled Junior Catalog. Write for a copy of this catalog of up-to-date equipment for junior high schools.

THE OLIVER MACHINERY COMPANY of Grand Rapids, Michigan, have recently bought out a new machine tool, known as their No. 80 variety Saw Bench. It is driven by a motor built into the machine recognized as the best in motor efficiency. The machine is designed to do ripping, cross-cutting and dadoing in an efficient and thoro manner. It will cut a perfect miter, it will measure any angle instantly and accurately, it will cut off to lengths or rip to width—all without the operator doing any calculating. This saw bench has many special features, is equipped with various attachments of value in the manual training shop. Altogether it is a machine worthy your earnest consideration when planning new equipment. Ask the manufacturers for a copy of their new circular describing this machine.

### MITER SAW BENCHES

The "Tannewitz" Universal Double Revolving Arbor Saw Bench with Sliding Table and Taper Pin Gauges is the only logical tool for the wood shop where frequent setting up is the rule and accuracy is the goal. Send for bulletin.

**THE TANNEWITZ WORKS**  
GRAND RAPIDS, MICH.

## Build Your Own PHONOGRAPH

Instructive—arouses pupils' enthusiasm—provides one of the best problems in cabinet making.

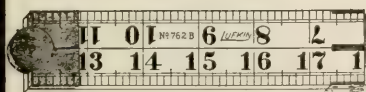
Let Your Pupils Build Choraleon Phonographs

We furnish, plans, blue prints, motors, tone arms, case material—in fact, everything required. Full instructions. Choraleon's have fine tone. Play any record.. Ask for particulars

**CHORALEON PHONOGRAPH CO.**  
920 7th St., Elkhart Ind.



# LUFKIN



**STEEL and WOOD RULES - - MEASURING TAPES**

Complete high grade lines

On Sale Everywhere. Send for Catalog.

SPECIFY—

**LUFKIN**

**THE LUFKIN RULE CO. Saginaw, Mich.**

New York

No. 106-110 Lafayette St.



## CLASSIFIED ADVERTISEMENTS



*Do you want to sell or want to buy some school shop supplies? Do you want to employ a teacher? Do you want a new position? Advertise your wants in these classified columns. Rate 20c a line, minimum \$1.00.*

### MANUAL TRAINING LUMBER

**AMERICAN WALNUT LUMBER**—We carry a stock of over two million feet of Walnut Lumber, consisting of all grades and thicknesses from  $\frac{1}{2}$ " to 4". Due to this large stock we are always in position to supply dry lumber for Manual Training use. Send us your inquiries. Frank Purcell Walnut Lumber Company, 12th Street & Belt Line, Kansas City, Kansas.

**AROMATIC TENN. RED CEDAR BOARDS.** Small shipments a specialty. Write us for prices delivered at your railroad station. Earthman Lumber Co., Murfreesboro, Tenn.

**MORGAN MANUAL TRAINING MATERIALS**—A perfect system of dry kiln enables us to give you lumber thoroughly dry. Carrying in stock large quantities of different woods permits us to fill your orders with the best selections. Write, sending us a list of the materials you desire. We will quote you attractive prices. Morgan Company, Oshkosh, Wisconsin.

**LUMBER**—Maisey & Dion, 2349 to 2423 South Loomis St., Chicago, Illinois, carry in stock a large and diversified stock of **MANUAL TRAINING LUMBER.** Fifteen years' experience with schools enables us to fill such orders satisfactorily.

**GILCREST LUMBER CO., DES MOINES, IOWA**—Have in stock, **Manual Training Woods** as follows: Mahogany, Cherry, Sap Gum, Red Gum—Plain & Figured, Black Walnut, Aromatic Red Cedar, Chestnut, Plain & Quartered White Oak, Plain and Quartered Red Oak, White Ash, Hickory, Unselected Birch, Hard Maple, Yellow Poplar, Basswood, Red Cypress, White Pine, Yellow Pine, Fir, Glued Up Leg Stock. Correspondence Solicited.

### BLUE PRINTS

**FREE CATALOG AND SAMPLE**—Blue Prints of Agricultural, Furniture Making, Mechanical Drawing, Wood Turning, Forge Work, Pattern Making and Whittling Problems. Make your work more practical. Work from blue prints. Schenke Blue Print Co., 1034 Carney Blvd., Marinette, Wis.

### PRINTING SUPPLIES

**TYPE**—Manufacturers of Metal Type, Wood Type, Reglet, Brass Rule and Printers' Supplies. In no trust or combination. Empire Type Foundry, Buffalo, N. Y., Delavan, N. Y.

### PHONOGRAPH PARTS

**PHONOGRAPH PARTS**—Builders and prospective builders should send stamp for my catalogue of Reliable Motors, Tone Arms, Cabinet Hardware, Automatic Stops, Repeaters, etc. Kremer's Phono Parts Store, 118 West Court Street, Dayton, Ohio.

### POTTERY SUPPLIES

**POTTERY SUPPLIES**—Kilns, Glazes, Clay, Modelling, Wheels, Tools. Plaster Models, Moulds, Stilts, Pyrometric Cones, Modelling Plaster, Metallic Oxides, Chemicals. Lewis Institute, Chicago.

### ENGINE CASTINGS

**GASOLINE ENGINE CASTINGS**—Castings for  $\frac{3}{4}$  horse gasoline engine. Also four horse. Complete working blue prints \$1.00. This includes assembly prints and detail prints of every part. We have lathe castings.—Central Mfg. Co., Fairfield, Iowa.

### UPHOLSTERY MATERIALS

**CUSHIONS**—You know your cushions will be made right when furnished by the Grand Rapids Cushion Company. Write for estimates on cushions and all kinds of upholstery supplies. Grand Rapids Cushion Company, Grand Rapids, Michigan.

**LEATHER AND IMITATIONS**, cushions any size or style to fit your chair or davenport, upholstery materials and supplies, also cabinet hardware, pulls and catches, mirrors, chest trimmings, art glass and other "hard-to-get" supplies for the manual training shop. Write today for new catalog. Thurston Manual Training Supply Co., Anoka, Minnesota.

### ELEMENTARY HANDWORK

**PINE NEEDLES FOR BASKETRY**—Supplied in brown and green colors, securely tied, at 30 cents per lb., not including carriage. Address, Miss Florence Williamson, Laurel, Mississippi.

**EVERYTHING FOR ELEMENTARY HANDWORK**—Also for basketry, weaving, bookbinding and chair caning. Mounting boards, Walcraft dyes, crayons, burlap, scissors, punch and eye sets. Thomas Charles Co., 2249 Calumet Ave., Chicago.

**BASKETRY MATERIALS** for schools and craft workers. Reeds, willow, chaircane raffia, Indian ash splints, braided rush and straw—fine smooth quality—dyes and finishes. Any amount of reeds sold from a half pound up. Also tools and books of instruction. Send for free catalog. "Everything for Basket Making." Louis S. Drake, Inc., 34 Everett St., Allston, Mass.

### SHOP EQUIPMENT

**ELECTRIC GLUE HEATER**—Best for manual training shops. Economical, safe, reliable, no burnt glue. Many shops are already using them. Two pt. size \$8.00. 3 pt. size \$8.50. Complete with 6' cord. For extra low heat feature \$1.00 extra. State voltage required. Safety Glue Heater Co., Faribault, Minn.

### SCHOOL SHOP SUPPLIES

**SODERING SUPPLIES**, including the famous Allen Non-Acid Sodering Fluxes—in stick, paste, salts and liquid form; handy soder sets, sodering tools, aluminum soder and flux. As pioneers in the development of fluxes that far surpass muriatic acid, in every way, and as the original exponents of non-acid fluxes, the House of Allen has for 25 years maintained a position of leadership in the Arts and Crafts concerned with sodering. Send for our Bulletins, L. B. Allen Co. Inc., 4584 N. Lincoln St., Chicago, Ill.

**"HARD-TO-GET" MATERIALS**—Here they are—Chest trimmings (coppered bands, nails, locks, cover supports, handles, casters, etc.), tea wagon wheels and casters, nifty pulls, upholstery supplies, etc. We make any size cushion for your piece. New catalog. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

**MANUAL TRAINING SUPPLIES**—We carry most things needed in the manual training departments such as, tools, imitation and genuine leathers, and upholstering supplies. Tray handles, catches and knobs, casters, mirrors, etc. Write for our Catalog. F. A. Rauch & Co., 410 So. Market St., Chicago, Ill.



## BOOK NOTES

A FEW days ago we received a request from a teacher in Indianapolis asking for twenty copies of a report on the use of textbooks which The Manual Arts Press published several years ago on a small slip of paper. Unfortunately we were unable to furnish these, as our supply has long been exhausted. This teacher said of this report, "It is right, strictly true, and pedagogically and vocationally sound."

This incident leads to the thought that other teachers, also, may be interested in statements contained in this report, and so we print it below. The following is quoted from the recommendations of the manual training teachers in the five high schools of one of the largest and most progressive cities in the United States:

"The teachers of mechanic arts submit for your approval the following report on shop notes, texts and reference books:

For the reasons stated herewith, we recommend that we be allowed to use either notes, texts or references—or a combination of the three, at the discretion of the teacher—for assistance in teaching of our work in manual training and mechanic arts.

1. With the assistance of these reference books we hope to supplement and enrich the instructions of the teacher, to save the time and energy spent in the needless repetition of answers to the constant demand for information, as the individual need arises.

2. We would save much of the limited time in the shop for the students, who, thru the use of these references, is enabled to proceed without waiting for individual detailed directions from the teacher.

3. The work in manual training consists of shop practice, theory and information. The theory, principles and information of the Arts are what we desire to present to the student by means of these books, in order that the work may be done with greater dispatch.

4. By the use of a book, the teacher is enabled to hold a class responsible for the definite knowledge of principles, and processes to a degree that is impossible, when only verbal instructions have been given.

5. It is of importance that our students learn how to read, translate and digest technical literature. In no other way can a graduate keep pace with the strides that are being made in matters technical. An acquaintance with the methods of technical presentation may be learned by the use of reference works, such as we advocate, and the ability to translate the printed page into intelligent

action is a valuable acquisition to one's education."

THE LONDON *Times Educational Supplement* gave nearly a column to a critical review of *Teaching Manual and Industrial Arts* by Griffith. It praised the pedagogy and the scope of the book, but it didn't like some of the American language in it—"the jargon of the trade," as the reviewer called it. Among the examples of such jargon he cites the phrases "squaring-up stock" and "training on the job." On the other hand, he speaks of the book as a "well-seasoned treatise," "sane and well-balanced." He says it "admirably meets the need for coordinating principles," and "is well worth studying from cover to cover." Then in summing up he says, "There is no line of effort or of experiment which does not secure from Professor Griffith sympathetic treatment, and on which he has not something illuminating to say. He emphasizes over and over again the distinction between the spontaneity which is encouraged by allowing the informal handling of materials in the kindergarten and the creative effort which only becomes effective after the pupil has been thru a course of discipline and instruction. To him spontaneity is the beginning and the end of education. But the middle is instruction."

THERE has been some delay in completing the work on *Mechanical Drawing for Beginners* by Charles H. Bailey, announced earlier in the season, but the plates are nearly completed at this writing, and it is expected that the book will be ready early in January, in time for use in classes during the second semester of the school year. From week to week, as the work has gone forward, we have been more and more impressed with the exactness, the directness and the comprehensiveness of the author's text covering the processes of elementary mechanical drawing. It tells in detail "just how to do it," and includes a thoroly practical and methodically sound course of instruction.

In order to keep the cost down the book is being bound in heavy cover paper.

HERE is what one customer says of Maclin's *Lettering Cards*:

"Received five packets of plates on lettering O. K. Am very much pleased with them. They fill a heretofore vacant niche in the teaching of lettering to beginners."

The Manual Arts Press has on hand a few copies of the tests given in the Projects Department in December. Each test is printed on a separate sheet, ready for student use. The price is 15cts for 25 duplicate copies of one test.



# MAYDOLE HAMMERS



Adze Eye  
Nail Hammer



Machinists'  
Hammer



Blacksmiths'  
Hammer



Copperworkers'  
Hammer



Adze Eye  
B. F. Hammer

JUST A FEW OF OUR HAMMERS

All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request

THE DAVID MAYDOLE HAMMER CO.

NORWICH, N. Y.

## PRANG ART BOOKS

"THE THEORY AND PRACTICE OF COLOR."

By Bonnie E. Snow and Hugo B. Froehlich. The most authoritative work on "Color" issued in this country. Illustrated with hand painted "Color Charts" of great value. Large quarto, price \$4.00; by mail, \$4.25.

"ART SIMPLIFIED." (Revised Edition.)

By Pedro J. Lemos and John T. Lemos. A book of practical instruction in Art for advertisers, commercial artists, teachers and students. 22 full-page plates, 175 pages. Price \$4.00; by mail, \$4.25.

"LETTERING"

By Thomas Wood Stevens, of Carnegie Institute. The standard work on the subject for students and artists. 110 full page plates. Large quarto. Price, \$3.00; by mail, \$3.25.

"CONSTRUCTIVE ANATOMY"

By G. B. Bridgman, Art Students League. The newest and most authoritative book on the subject. Price postpaid, \$7.50.

"A SHORT HISTORY OF ART"

By De Forest and Caffin. The most comprehensive single volume on the subject, comprising 758 pages with 289 illustrations. Price, \$4.00; by mail, \$4.25.

"FIRST LESSONS IN BATIK"

By Mary C. Scovel, Head of the Normal Department, Art Institute of Chicago.

A practical handbook, giving full information for Batik dyeing on many different fabrics. Beautifully illustrated with cuts from original Javanese Batiks. Price, \$1.50; by mail, \$1.60.

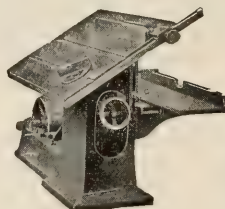
"PERMODELLO MODELING"

By Bonnie E. Snow and Hugo B. Froehlich. Gives full directions for innumerable uses of "Permodello," the permanent Modeling Clay, which sets like concrete without firing. Beautifully illustrated. Price, \$1.50; by mail, \$1.60.

Send for Descriptive Circulars and New "Prang Bulletin."

**THE PRANG COMPANY**

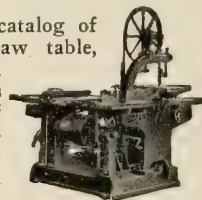
30 Irving Place, New York City  
1922 Calumet Ave., Chicago



## Crescent Wood Working Machines

are the tools your students will eventually use so give them the opportunity now of learning about this splendid line of wood working machinery.

Send today for our catalog of band saws, jointers, saw table, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinders, borers, hollow chisel mortisers, Universal wood workers.



**The Crescent Machine Co.**

46 CHERRY ST.

LEETONIA, OHIO

The largest selling  
quality pencil in  
the world



17 Black Degrees  
3 Copying  
All Perfect

## VENUS PENCILS

For superb effects in lights and shading, for freehand drawing or close detail work, the famous VENUS is unexcelled.

For bold, heavy lines . . . 6B-5B-4B-3B  
For writing, sketching . . . 2B-B-HB-F-H  
For clean, fine lines . . . 2H-3H-4H-5H-6H  
For delicate, thin lines . . . 7H-8H-9H

At Stationers and Stores Everywhere

**American Lead Pencil Co.**

219 Fifth Ave., Dept. A, New York  
also London Eng.



# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.

WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City.

EDITORS FRANK M. LEAVITT, Associate Superintendent Public Schools, Pittsburgh, Pa.

WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON.

Published monthly by The Manual Arts Press, 237 N. Monroe St. Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

## CONTENTS

THE HIGH SCHOOL MANUAL TRAINING TEACHER AND HIS JOB	
.....James Mc Kinney	243
TEACHING A TRADE IN THE ARMY (Illustrated).....	R. W. Selvidge 246
CO-OPERATION IN THE SCHOOL.....	J. J. Eaton 258
EDITORIAL REVIEW FOR THE MONTH.....	260
The Bureau of Education Conference—The “Intensive Plan” in Newark—General Education, but Different—Shop Teachers for Part-time Classes—A Southeastern Representative.	
A POINT OF VIEW.....	Arthur Dean 264
WASHINGTON CORRESPONDENCE.....	William T. Bawden 267
Advantages of Manual Training Sometimes Emphasized by Omission.	
IN FOREIGN COUNTRIES.....	268
A New Training College for Handicraft Teachers—The Psychological Factor in Industry—Trade Union Funds to Promote Education—J. H. Judd Retires.	
PROJECTS, PROBLEMS AND NOTES.....	270
Determining Cost of Materials—Photographic Printing Box—Invalid’s Tray and Tub Stand—Biplane—Forging Problems—Method of Staining Checker Board.	
CURRENT PUBLICATIONS.....	276
FIELD NOTES.....	IV
The Illinois Manual Arts Association—School Crafts Club of New York—Eastern Arts Association—From the Southwest—Industrial Work in the Schools of Houston—Industrial Arts Meeting in California—Around New York—Continuation School at Navy Yard—Vocational Teachers ask for Shorter Hours—Want Shorter School Year—Southeastern Items.	
TRADE NOTES.....	XXVI
BOOK NOTES.....	XXXVII

*This Magazine is kept for sale at McClurg’s in Chicago, and Brentano’s in New York.*

Entered at the Post Office at Peoria as Second-Class Matter. Copyright, 1920, The Manual Arts Press.



## FIELD NOTES

### THE ILLINOIS MANUAL ARTS ASSOCIATION

THE Seventeenth annual meeting of the Illinois Manual Arts Association was held on Thursday December 30th at the high school building in Springfield. During the war the meetings of this Association were quite irregular because its president, L. A. Tuggle of Danville, was a captain at the front in France, and other officers were too busy with war work or other duties to keep up the usual activities of the Association. This meeting in Springfield was, therefore, the revival meeting of an organization that was one of the very first of the state associations of manual arts teachers, and one that has a good record for activity and attendance.

Thanks to President Tuggle, former Secretary Barber and a few others associated with them, the revival meeting was a thoro success and will probably mark the beginning of a new era for the society. Prof. Albert F. Siepert of Bradley Polytechnic Institute was elected president for the coming year. A. M. Mercker of Quincy was made secretary and A. B. McCall of Springfield, vice-president. These men are leaders among the younger men in the state and may be depended upon to carry on the work of the Association.

Perhaps the outstanding characteristic of the meeting was that of good fellowship. One new man in the group said that he never attended a meeting of teachers where he had so much fun. The fraternal spirit of the group increased from hour to hour and, when the time for closing came, the group made a very happy company. No small part of this grew out of the thrusts of President Tuggle, who kept calling attention to the "old timers" who were present. Prof. Vaughn retaliated with the expression of fear that they would have great difficulty in selecting a president because half of the men there had been president and therefore, according to custom, were ineligible. While this was not arithmetically true, it was true that fully half of the talking was done by ex-presidents, who were becoming "old and garrulous," at least, by comparison.

The program included the following: "The Manual Training Teacher—a Professional" by A. M. Mercker, "Need and Method of Teaching Freehand Drawing in Manual Arts Work" by A. B. McCall, "Part-Time Schools for Children in Employment" by J. F. Kolb, assistant state supervisor of industrial education, "Continuation Work in its Relation to Manual Arts" by S. J. Vaughn, "The Aim of Manual Arts Instruction for Boys of the Junior High School" by Chas. A. Bennett, "The Lesson

Plan" by Albert F. Siepert, "Class Teaching and Individual Teaching in the Manual Arts" by A. C. Newell, and "Vocational Rehabilitation of Disabled Soldiers" by L. W. Wahstrom. Mr. F. Kavanaugh of Springfield presided at the afternoon session.

### SCHOOL CRAFTS CLUB OF NEW YORK

A ROUND Table Meeting of the School Crafts Club was held at the Ethical Culture School, New York City, Saturday evening December 18th 1920.

The program for this round table was arranged along somewhat different lines than have been followed in the past. One subject was discussed by various speakers before the entire meeting instead of dividing into sections.

The topic under discussion was "Little Ships." As a school project the making of little ships was described by Edwin Judd and Richard T. Johnston of Montclair, N. J. and by Thomas Darling of the Mt. Morris Jr. High School, New York City. All of these men showed models and described in detail the presentation to the class.

Richard A. Beyer president of the Club discussed "Little Ships" as a hobby for grown up boys, showing the possibilities from both the engineering and artistic standpoint. Mr. Beyer illustrated his talk with many interesting model ships including a quite large, partially completed model of the Santa Maria made by himself.

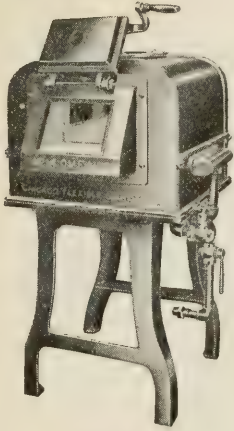
Hilding Froling of New York City talked of ship design, showing the steps actually followed. Mr. Froling drew largely from his own experience as a designer and builder of boats.

The Club held its second regular meeting for the school year at Hoboken, N. J., on January 15th. The plan of the meeting was quite out of the usual. According to the announcement, the members assembled at the Library Building and there divided into two groups, one visiting the factory of the Keuffel & Esser Co., manufacturers of drawing instruments, and the other visiting the shops and laboratories of Stevens Institute. After these inspection trips a business meeting was held.

### EASTERN ARTS ASSOCIATION

THE forthcoming meeting of the Eastern Arts Association at Baltimore on March 24, 25, and 26, promises to be of unusual interest. Maj. Fred P. Reagle, vice-president of the Association, has charge of the program and has already secured some of the strongest speakers in the East. The tentative program will be issued in printed form to all members before March 1.





**STEWART**  
**No. 14 OVEN FURNACE**

For Hardening High Speed or Carbon Steel, or for Pre-Heating for High Speed Steel Hardening

**SPECIFICATIONS**

Opening, 6"x10"; depth, 15"  
Floor space, 34"x36"  
Gas and air connections, 1¼"  
Shipping weight, 1210 lbs.  
For gas or oil fuel

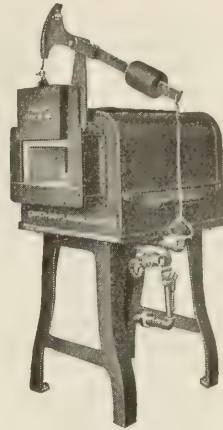


**STEWART**  
**ROD END FORGE**

For Light Forging, Tool Dressing, Rod or Pipe End Heating, File Making, Etc.

**SPECIFICATIONS**

Opening, 2"x10"; giving spot heat of 8"  
Floor space, 24"x24"  
Gas and air connections, 1¼"  
Shipping weight, 430 lbs.  
For gas fuel only



**STEWART**  
**No. 27 OVEN FURNACE**

For Hardening High Speed Steel, Annealing and Carbonizing

**SPECIFICATIONS**

Opening, 6"x12"; depth, 18"  
Floor space, 36"x40"  
Gas and air connections, 1¼"  
Shipping weight, 1450 lbs.  
For gas or oil fuel

# Develop Student Interest

**STEWART FURNACES** for the proper heat treatment of metals are ideal equipment for the school shop, for they are scientifically constructed and thoroughly practicable in the industrial field.

Your students on getting out in shops and tool rooms will find Stewarts everywhere. They make good on a wide range of work, and have helped many a manufacturer establish and maintain "quality" production.

*Let our furnace engineers tell you why  
your school should install Stewarts.*

**Chicago Flexible Shaft Company**  
1128 South Central Ave., Chicago

350 Broadway, New York

Railway Exchange Bldg., St. Louis



## FIELD NOTES—(Continued)

The local committee with M. Theodore Hanford Pond as chairman and Walter R. Gale as secretary, have plans well matured for entertaining the convention. The headquarters will be the Maryland Institute which has ample accommodations for all meetings as well as for the exhibits both educational and commercial which will again be a prominent feature of the convention. The Institute has the further advantage of being convenient to the railroad stations and to the hotels.

The Committee is planning to provide automobile excursions to the art galleries and museums as well as to places of historic interest, with both of which Baltimore is so well favored. The program will provide definite time for such excursions. Baltimore being only one hour's ride from Washington, it will thus be possible for visitors to include a trip to the National Capitol in their convention plans.

In this Baltimore meeting the officers of the Association are endeavoring to stimulate industrial art interests throughout the Southern Atlantic States which have hitherto been out of the reach of such conventions.

Inquiries relative to exhibits, advertising or entertainment should be addressed to Prof. Walter R. Gale, Baltimore City College, Baltimore, Md.

—M. W. HAYNES.

### FROM THE SOUTHWEST

**HENRY F. HOLTZCLAW** who has been local superintendent in charge of the Oklahoma City office for rehabilitation of soldiers under the direction of the Federal Board for Vocational Education for the past year has been appointed State Supervisor of Trade and Industrial Education for the State of Oklahoma. He will also have charge of the program of industrial rehabilitation which is being planned for the state. Dr. Holtzclaw is a graduate of the University of Arkansas. He has received his Ph. D. degree from the John Hopkins University. He had an extended experience during the war along the line of work in which he is now engaged.

THE EAST TEXAS STATE NORMAL COLLEGE, Commerce, Texas, has a quite complete equipment for manual arts work. The school is offering the following types of courses in the Department of Manual Training: woodwork, carpentry, drawing, sheet-metal, forging, and cement work. Teachers courses for the purpose of qualifying students to teach vocational work under the Smith-Hughes law are given.

A course in benchwork is offered to girls. The work in this course consists of a series of articles that will prove useful in the home.

Two courses in woodwork are being conducted

by the factory production method. The following are some of the articles which have recently been completed as class projects:

1 set of play-ground apparatus.

1 poultry house.

Furniture and fixtures for office, tool-room, and wood-finishing room.

8 typewriting desks.

6 double and triple screens for stage scenery.

J. G. Grove is the director of manual training at this school.

AN EXTENSIVE PROGRAM of evening and continuation schools is being put into operation in Tulsa, Okla. Courses in carpentry, drawing, automobile repair, commercial work, and a great many other subjects are now offered. John Orman is the director of this work.

A course in foremanship training was conducted in Tulsa during the Christmas holidays. Many of the industrial concerns sent a group of men to attend this course. The course was offered by the State Board of Vocational Education in connection with the Tulsa High School.

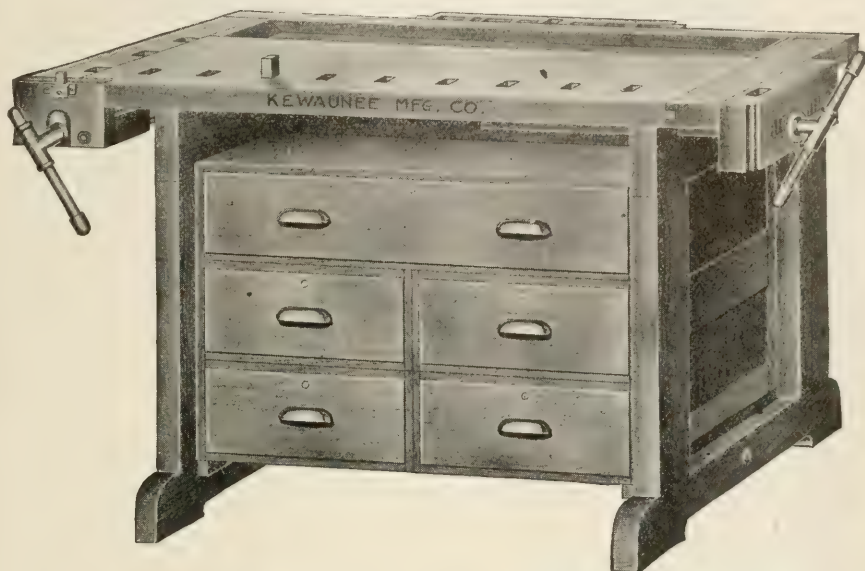
### INDUSTRIAL WORK IN THE PUBLIC SCHOOLS OF HOUSTON

THE public schools of Houston, Texas, are now offering one of the most complete programs of industrial education of any city in the South or Southwest. During the entire journey from the beginning of the fifth grade on throughout the high school the students have the opportunity to do some kind of shopwork or drawing, and in some cases a chance to choose between a large number of different branches of industrial work.

In the fifth and sixth grades, woodwork is given  $1\frac{1}{2}$  hours a week. Above the sixth,  $3\frac{1}{2}$  hours a week are devoted to this subject until the student enters the high school at which time  $1\frac{1}{2}$  hours a day are spent in all shop and drawing courses.

In the first year of high school, the student may choose between cabinet making, wood-turning, and mechanical drawing. In the second semester of the first year, the use of woodworking machinery is permitted in the cabinet making courses. Advanced cabinet work, pattern making, and mechanical drawing, are offered to the students of the second year. The course introduces forging and automobile work in addition to advanced mechanical drawing and architectural drawing for the third year. In the fourth year, the student is offered a choice of automobile work, machine shop practice, advanced mechanical drawing, or architectural drawing. Printing will be added to the course for next semester.

# Better Laboratory Furniture Means Better Teachers



MANUAL TRAINING BENCH No. 1905. Accommodates four students at a time.

In these days of a scarcity of good instructors, school authorities generally realize the importance of providing proper scientific equipment as a means of attracting and holding the better grade of teachers.

Inadequate equipment does not give the teacher an opportunity for efficient work; and it robs the scholar of what he has a right to expect.

You cannot afford to equip with anything less than Kewaunee.

The Kewaunee Book will interest Superintendents and Teachers who are thinking of installing Laboratory Equipment for Manual Training. Ask for a copy, indicating the subject in which you are interested. Address all inquiries to the factory at Kewaunee.

Pacific Sales Division:  
6th Floor  
Metropolitan Building.  
Los Angeles, Cal.

*Kewaunee Mfg. Co.*  
LABORATORY FURNITURE EXPERTS  
111 LINCOLN ST.

New York Office:  
70 Fifth Avenue

**KEWAUNEE, WIS.**

BRANCH OFFICES:

CHICAGO	OKLAHOMA CITY	MINNEAPOLIS	KANSAS CITY	COLUMBUS
SPOKANE	DENVER	ALEXANDRIA, LA.	ATLANTA	LITTLE ROCK
	DALLAS	JACKSON	TORONTO, CAN.	



## FIELD NOTES—(Continued)

In addition to the regular high school courses there is a varied program of work carried out in the trade extension and night schools. A part time class for printers is now in operation. This class meets four hours per week. There are now night school preparatory classes for electricians, machinists, sheet-metal workers, carpenters, bookbinders, saleswomen, milliners, waitresses, dress makers and art needle workers. These classes have a two hours session three evenings a week. They are all organized and carried out in accordance with the Smith-Hughes law requirements. There are several classes in the night school which are not governed by the regulations of the Vocational Board, namely: automobile mechanics, woodwork, mechanical drawing, and architectural drawing. Of the classes mentioned, those for bookbinders, printers, milliners, dressmakers, and art needle workers, have been added this year.

A \$2,000 equipment for printing has been added this year; also a complete equipment for machine shop and auto mechanics, and one for mill work and machine woodworking.

Seventeen teachers are now employed in industrial work in the day schools. In the extension schools there are nine who are giving work under the specifications of the Smith-Hughes law, and six whose work does not fall under the direction of the Vocational Board. The following teachers have been added this year: Guy M. Brown, of Winfield, Kansas, who is a graduate of the Kansas State Manual Training Normal School, Pittsburg, Kansas; W. B. Westerman of Detroit, Mich., a graduate of Thomas Normal Manual Training School; C. J. W. Smith, who is a graduate of the Huntsville Normal School; and Roy Crofton, of Houston, a student of Rice Institute.

That the manual arts work of the schools of Houston is of a practical nature is evidenced by the fact that during the spring and summer of last year the manual training students, under the direction of the regular teachers, built furniture for two new high schools. The value of this furniture was estimated conservatively at \$15,000. The following is the list of articles made:

- 65 six-drawer teacher's desks.
- 38 four-drawer teacher's desks.
- 40 mechanical drawing tables.
- 25 double domestic science tables.
- 25 tables of various kinds, such as sewing and book-room laboratory tables, etc.
- 16 typewriter tables, each for four typewriters.
- 8 bookkeeping tables, each for two students.
- 8 glazed front exhibition and instrument cases of various kinds and sizes.

2 apron lockers, each 14 feet long.

Many other similar articles.

During the summer the teachers were paid the regular salary while occupied with this kind of work. The students were given one-half of the credit that they would receive for the same number of hours of regular manual training work, and in addition to this were paid from 15cts. to 30 cts. an hour. All the furniture was constructed from quarter-sawed oak. When completed, it was found to be fully up to the commercial standard in quality, both in construction and finish. A survey of the whole undertaking showed that the amount of 20 per cent had been saved to the School Board by doing this work in the shops of the schools.

E. M. Wyatt, who may well consider himself almost a veteran in the field of manual arts, particularly in the South and Southwest, is the supervisor of manual training at Houston. He has held the same position for fourteen years. During this time he has constantly been awake, making an effort to improve the condition and the standing of his department. He has been a student of the progress of the work in other cities and has spared no effort in making the industrial work in the schools of Houston count for the best that it has been possible to obtain. The advancement that the department has experienced is ample proof of the ability of Mr. Wyatt as an organizer and director in this field of endeavor.

Mr. Wyatt is a graduate, with a B. S. degree, from The Kansas State Manual Training Normal School. He has also attended Stout Institute, and Bradley Polytechnic Institute. He taught four years—three in Kansas and one in Texas—before coming to Houston. Outside of his own state he is perhaps best known as the author of two publications, "Tracings of Grammar Grade Problems in Manual Training" and "Blueprint Reading." The latter is a late book particularly designed for use in classes where Smith-Hughes work is taught.

—E. E. ERICSON.

## INDUSTRIAL ARTS MEETING IN CALIFORNIA

JUST recently, due to the energetic service of Frank R. Cauch, director of boys vocational work of Oakland, and dean of supervisors there, the Industrial Arts Section of the San Francisco Bay Region took a new lease on life. Several years ago this section was a branch of the then called California Manual Arts Association. As it was first organized, the Association was composed of three branches: a manual arts branch, a drawing and art branch, and a home economics branch.

# 40 Years of Progress with Fine Tools

---when old Dobbin  
was the motor."

ven in 1880, in the days when old Dobbin was  
the motor, machinists had learned to rely on Star-  
rett Tools for long service and measurements of un-  
varying accuracy.

o the first automobile factories to be established found  
skilled workmen ready to carry out the inventors' plans—  
with the help of Starrett Tools.

Starrett Tools are linked inseparably with the marvelous  
growth of the automobile industry. They have helped to  
make it possible. In the great automobile factories of  
today—in every shop where metal is worked to the closest  
limits of tolerance—skilled mechanics know and prefer  
Starrett Tools.

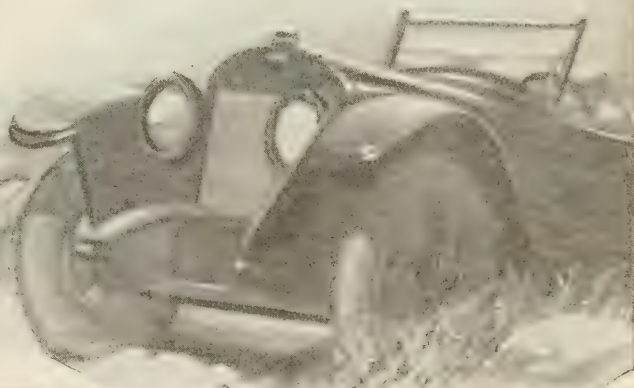
The Starrett Catalog No. 22'EF' is a useful reference book.  
Write for a free copy.

## THE L. S. STARRETT COMPANY

*The World's Greatest Toolmakers*  
*Manufacturers of Hack Saws Unexcelled*  
ATHOL, MASS.



1920



# Use Starrett Tools



42-117



## FIELD NOTES—(Continued)

Later an agricultural branch was admitted to the Association; and still later a music branch, after much appealing, was granted admission. The Association, up to a few years ago, was a most flourishing organization. But gradually, due to one cause or another, it dwindled in membership and vitality until a year or so ago—some wits say due to the Spanish influenza—the Association breathed its last.

Not until quite lately did it become apparent that no one knew definitely about the collapse of the once prosperous association, so quietly and gradually did the end come. When, however, the secretary of the California Teachers' Association, Bay Section, began to make out his program last fall for the recent annual convention, he found it impossible to locate anyone who would claim the honors of having been the last president of the defunct organization. And then only did the fact of the organization's demise become known. Upon investigation it was discovered that each of the branches of the old association was maintaining a separate and quite effective existence, except the industrial arts branch whose story has just been briefly related.

Mr. Cauch, at the earnest request of the officers of the California Teachers' Association, Bay Section, undertook, in the few remaining days before the Association convened, to organize the scattered forces into an Industrial Arts Division of the Bay Section, and to provide a program. In the emergency, he called upon the writer the day before the division was scheduled to meet, and asked him to address the body on any subject he might choose which, in his opinion, would be of interest to the group. The cause deserving every effort, the writer accepted the task; and at the meeting he offered to speak on either of the two subjects to both of which, in the course of his regular work, he had had occasion to give special attention. These two subjects were: (a) Part-time Education, with special reference to its application in California; and (b) "The Relationship between Manual Arts and Vocational Education."

The majority of those in attendance expressed a preference for the latter subject. And it should be said right here that the majority represented a goodly number; for, be it further said to the credit of Mr. Cauch, he, practically single handed and alone, had succeeded in drawing over seventy-five teachers to this meeting. The speaker, in discussing his topic, laid great stress upon the importance of recognizing the fact that each of the phases of manual education under discussion has a separate and distinct function. The manual arts work, he

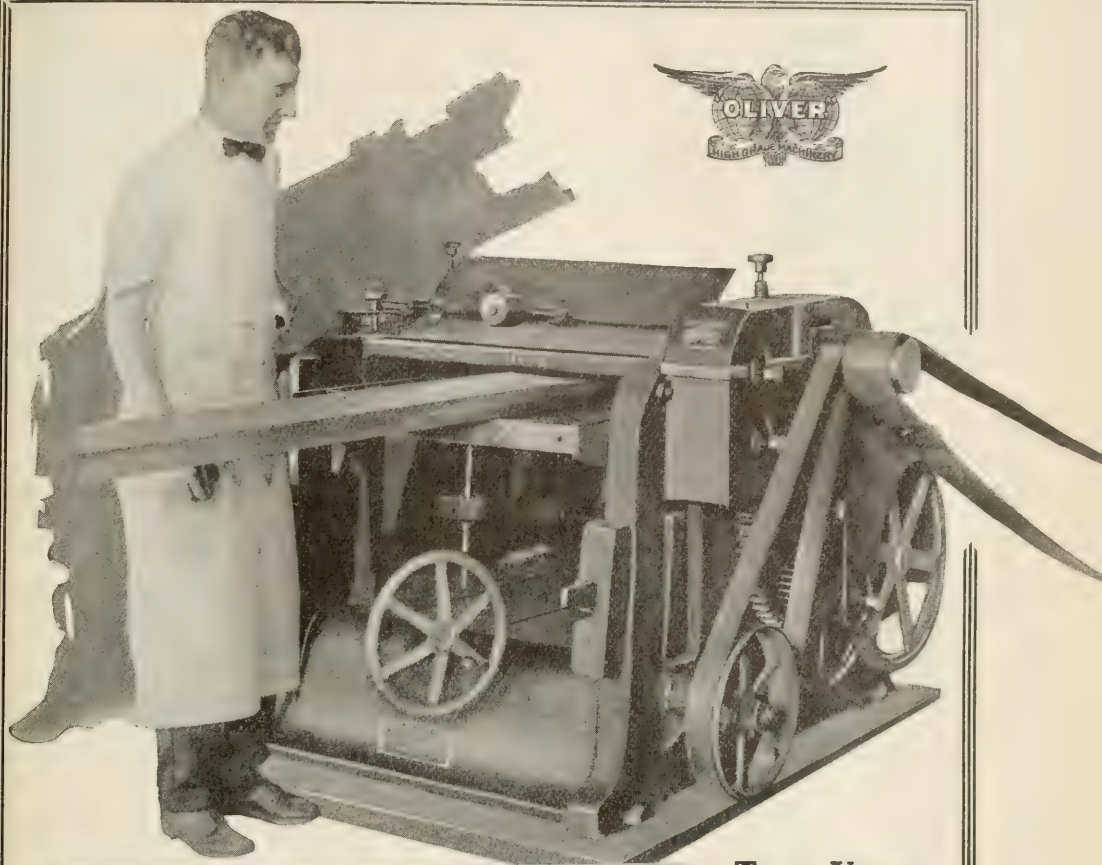
stated, has a broad general educational value; while the vocational work, by contrast, has a limited specific economic application. These distinct functions, he asserted, should be clearly recognized and properly served. But, the speaker hastened to warn his auditors, that the above statement should not be understood to imply that the function of either manual training or vocational education is wholly beyond the pale of the other. The speaker voiced the opinion, also, that the present prominence held by vocational education is due largely to the stimulus given it by reason of the national financial and accompanying state aid, and should not be cause for alarm to the advocates of manual training and related forms of education. The pendulum, he predicted, will soon swing to normal because manual training has too important a general purpose to be overshadowed by the more specialized purpose of vocational education.

Following the writer, Frederick Horridge, of the Santa Barbara State Normal School, addressed the gathering. He devoted himself to an impromptu discussion of the attitude which the manual arts teachers should take toward his work. The chief points he made related to (and this was the subject to which he gave most time) the importance to the manual arts teacher of taking a professional attitude toward his work.

When Mr. Horridge had concluded his remarks, Mr. Cauch introduced B. M. Nevison, one of the leading teachers of the Oakland manual training department, who made a brief statement concerning the need of organization. His talk paved the way for the election of temporary officers, and the appointment of a committee on organization. By unanimous accord Mr. Cauch was invited to act as temporary chairman and E. V. Hirst of the Oakland manual training department, was retained as secretary. Mr. Cauch appointed on the organization committee: J. A. Robison, head of the Industrial Department of the Oakland Technical High School, chairman; Richard Phelps of Alameda, E. F. Morrison of Alvarado, H. G. Clarke of Modesto, and Samuel Hughes of Berkeley. He also asked Mr. Horridge and Professor Jacobs if they would not assist the committee, and both expressed their willingness to serve.

The meeting just described was held in the morning, and those who attended it were so enthusiastic over the opportunity for the reorganization that, before adjourning, they voted unanimously for a second meeting to be held in the afternoon for the purpose of effecting a permanent organization. At the afternoon meeting, a committee was appointed to draft a constitution and by-laws and to submit





## Two Years Experience

adds weight to this opinion.

**"We have found the 'Oliver' Sur-facer very satis-factory."**

That is what a very prominent shop in Pittsburg says.

The "Oliver" Sur-facer will do equally well for you. In-vestigate it. Get our catalog describing

"OLIVER" QUALITY WOODWORKING MACHINERY

# OLIVER MACHINERY CO.

GENERAL OFFICES AND WORKS  
GRAND RAPIDS, MICHIGAN, U. S. A.



## FIELD NOTES—(Continued)

the same at a meeting to be called a month or so later by the temporary chairman. The committee appointed for the purpose of preparing the constitution and by-laws was composed of Mr. Nevison, Chairman; F. A. Flanders of Berkeley, H. A. Stauffer of Alameda, E. F. Morrison of Alvarado and W. J. Huston of Oakland.

It was in October that these meetings were held; at a meeting held in December, the organization was perfected, the constitution and by-laws proposed by the committee were adopted, with minor changes, and regular officers were elected. These officers are: Frank R. Cauch, president; Samuel Hughes, instructor in machine shop practice, Berkeley High School, vice-president; Mr. John Morrill, of the Manual Training Department of Alameda, secretary-treasurer.

Previous to the special business for which the December meeting was called, Professor R. J. Leonard, Director of the Division of Vocational Education of the University of California, delivered an address aiming to establish the aim and function of vocational education and of the various forms of school work which should precede it. He pointed out that this country is far from having reached the ideals of education which should prevail in a democracy. Many of our boys and girls leave school as soon as the law allows, and all too soon for their own good and the country's welfare. The result is we have much more illiteracy and incompetency than one would have reason to expect in a country where schools are to be found everywhere and education is free for all.

No attempt has been made in the past to hold in school the boys and girls who, upon arriving at the end of the compulsory school period, express a desire to leave. The schools of the past would not give these boys and girls what they need and would desire; namely, training for the life they are destined to live. As a consequence, we find every year thousands of boys and girls leaving school at an all too early age to go to work.

What work these youths undertake is largely a matter of chance. Neither personal aptitude nor previous preparation seem to be considered. The desire for a job being predominant, the first one offered is accepted. As a result we find much occupational inefficiency.

The inquiring educator who is fully aware of these facts is led to the consideration of three questions according to Professor Leonard. These questions are: (a) What are the general purposes of education? (b) How long have we to accomplish these purposes? (c) What contributes most to the development of efficient individuals?

The general purposes, the speaker maintained are: (a) Grounding all youth in certain essentials of knowledge and fact. (b) Getting all youth to understand present day conditions. (c) Discovering the interests and capacities of youth. (d) Training for occupational efficiency.

The length of time we have for accomplishing these purposes has been gradually increased, Professor Leonard pointed out. Where once a three months' school was considered sufficient, now we find the general tendency to be to hold the youth in full-time school up to at least fourteen. And where they are then permitted to go to work, at fourteen, they are, in many states, held for part-time education up to eighteen.

The speaker next addressed himself to the question of how we may determine what contributes most to the development of efficient individuals. To make this determination intelligently, the speaker argued, it is necessary to understand present day conditions; the present extensive application of power in manufacture, and the great subdivision of labor; also the great importance of having the worker in industry appreciate his occupational relationship. This, Professor Leonard asserted, industrial educationalists have not done. Instead they have made their determinations on the basis of such educational concepts as are expressed in the Arts and Crafts Movement, the Sloyd Movement, and the Disciplinary Movement.

As to the discovery of talent as a phase of school work, the speaker was emphatic in insisting that it is of prime importance. Before we set out to train youth, he said, we should know that the training is suitable. Therefore, continued the speaker, the school should undertake to disclose native ability. To the lack of such service as this, Professor Leonard attributes much of the present vocational mal-adjustment. How serious this mal-adjustment is, the speaker showed by presenting the case history of a youth who had over a dozen jobs in less than two years. While such a case is not usual, the speaker pointed out, cases of six to eight jobs for the same period are by no means uncommon.

The discovery of talent may be made in any one or more of several ways. "Exposure courses" may be offered for this purpose. A record system of school progress may be employed. Mental tests which will indicate vocational level may be used.

The training which the youth gets for occupational work must not come by means of the indirect route of "stealing his training," asserted the speaker; that is criminally wasteful. He ought to learn his trade from some one interested in his welfare, best of all thru the school. And then the school should



Whatever  
Your Requirements  
There Is a

**Sturtevant**  
REG. U. S. PAT. OFF.



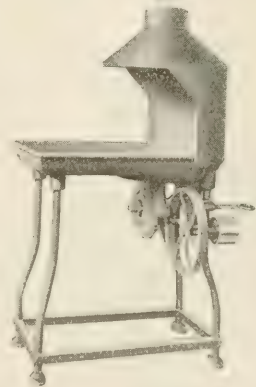
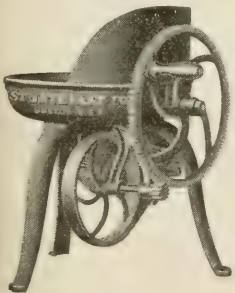
## Equipment To Meet Them

### STURTEVANT PORTABLE FORGES

are adapted for light work and are of particular value in the small school shop. They meet all the requirements of a small or medium sized forge for heating, tempering or small smith work. In construction they are exceptionally well built and are designed to meet all conditions. Almost every school, whether possessing a full forge equipment or not, would find one of these portable forges of special value. Not only because of its instruction value but also because of its many uses in connection with the maintenance of shop tools and equipment.

Our Engineering Staff design correct systems for any requirement. In every job goes the quality and efficiency resulting from sixty years of leadership in the design, construction and application of fans, fan systems and related products.

*Consultation on your  
problem invited.*



**B. F. STURTEVANT COMPANY**  
HYDE PARK, BOSTON, MASSACHUSETTS  
AND ALL PRINCIPAL CITIES





## FIELD NOTES—(Continued)

take upon itself the duty of securing for him suitable employment.

### AROUND NEW YORK

**E**XAMINATIONS for teachers in vocational subjects in both elementary and vocational schools will be held the latter part of February. Applicants should apply to Board of Examiners, 500 Park Ave., New York City.

THE REGULAR MEETING of the Associated Teachers of Shop Work was held Dec. 11 at 10 A. M. at Terrace Garden, New York City. The president, Timothy Paucher, presided. Routine business was transacted.

THREE ADDITIONAL EXAMINERS, one of whom is to be an expert on technical and vocational subjects, are to be appointed soon to the existing board of examiners of the New York City Board of Education.

THE ART DEPARTMENTS of the twenty-seven high schools of greater New York have arranged with the aid of the director, Dr. James P. Haney, a plan of cooperative visits to extend thruout the school year. These visits are to take the form of meetings held once a month, when the teachers of the school visited will be "at home", in the afternoon, to the art teachers from the other high schools.

The purpose of these gatherings is to afford teachers, who find it difficult to leave their work during school hours, an opportunity to study the organization and results secured in other art rooms thruout the city.

### CONTINUATION SCHOOL AT NAVY YARD

THE NAVY YARD CONTINUATION SCHOOL recently held an exhibition showing the work done by the young men. This continuation school is of the vocational type and is under the division of the Bureau of Vocational Education, George J. Loewy, director, and David Kriegel in charge. The exhibits consisted of objects made by the apprentices in the shop with the sketch and working drawing with the mathematics involved in the manufacture of the object.

The continuation school is conducted by the New York City Board of Education in co-operation with the Brooklyn Navy Yard.

The Board of Education furnishes the teachers and principal. The teachers are directly responsible to the principal.

The Navy Yard furnishes all supplies and necessary equipment for the school as well as the clerical help for matters pertaining to the school. The Navy Yard also furnishes a disciplinary officer.

The Board of Education controls the education and also the discipline of the apprentices in the school when punishment, such as suspension or docking pay, is not required; all subject to the approval of the Industrial manager.

The Apprentices in the school come from the various trades in the Navy Yard as follows:

29 Boatbuilders	11 Shipwrights
11 Joiners	8 Boilermakers
8 Painters	7 Coppersmiths
13 Plumbers	2 Die Sinkers
10 Sailmakers	64 Electricians
19 Sheet-metal Workers	56 Machinists
75 Shipfitters	7 Molders
15 Shipsmiths	5 Pattern makers

The numerals indicate the number of apprentices in each trade that attend school at the present time.

The pay of apprentices is as follows:

4th class 6 months.....	\$3.04 per day.
3rd class 6 months.....	3.52 per day.
2nd class 1 year.....	4.00 per day.
1st class 1 year.....	4.56 per day.
Upon graduation, minimum rate	
mechanic.....	5.68 per day.

The purpose of the school is to give a general education to apprentices and teach the related trade knowledge for the various trades in the Yard in order to fit them for positions as skilled mechanics and for positions of responsibility such as, quartermen, leading man, etc.

The trade work is taught in the shop and on the ship under practical working conditions by picked, well-trained mechanics.

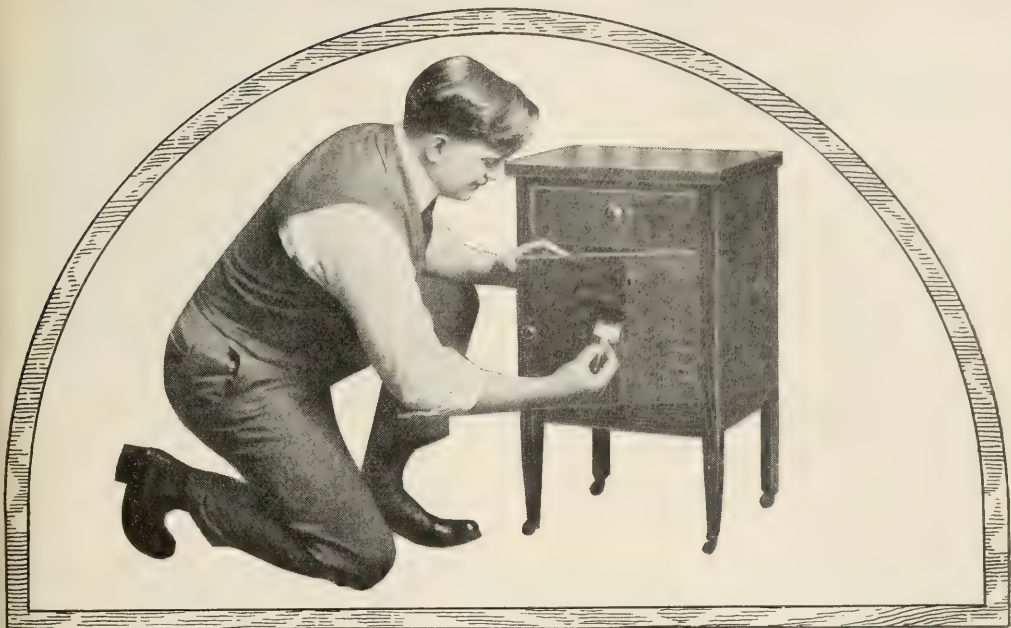
### VOCATIONAL TEACHERS ASK FOR SHORTER HOURS

THE ASSOCIATION OF VOCATIONAL TEACHERS are circulating petitions to have the hours of teaching reduced from 9 to 5 to 9 to 4 and to eliminate teaching during the month of July. They have sent the following petition to principals and superintendents:

"(1) The teachers of trade subjects, science and mathematics in vocational and trade schools appeal to you for aid that will bring relief from the long school day and year they are now serving.

"They submit that this measure of improvement is demanded in the interest of efficient vocational training of students in vocational and trade schools, and the retention, conservation and development in the service of competent teachers.

"On the principle of equal justice and fair play they ask that this group of teachers be accorded the privilege of dismissal when the daily program of instruction, routine clerical and preparatory school work are completed. They ask specifically that the compulsory attendance of teachers for



## Finish It Well

THE finishing of manual training models is assuming more and more importance every year. Surely it is a subject which should be given its share of attention, for a beautiful model may be ruined if improperly finished, while the defects of a poorly constructed model are minimized if well finished.

### JOHNSON'S ARTISTIC WOOD FINISHES

Johnson's Artistic Wood Finishes are now being used in nine-tenths of the schools in the Country. They are particularly adapted for manual training work as they may be applied by the youngest and most inexperienced pupils with the best results.

The Johnson Wood Finishes most popular among Manual Training Instructors and Pupils are *Johnson's Wood Dye*, *Prepared Wax*, *Under-Lac*, *Paste Wood Filler*, *Flat Varnish*, *PerfectTone Under-Coat* and *PerfectTone Enamel*. We have a very attractive exhibit of wood panels finished with these products which we are glad to send Manual Training Instructors who will give it wall space in their shop. Write for it.

#### *Beautiful Instruction Book Free*

Our beautiful new thirty-two page colored booklet "The Proper Treatment for Floors, Woodwork and Furniture" is just off the press. It is full of valuable information for Manual Training Instructors and Pupils. Do not hesitate to write for it. We will gladly furnish it free upon request.

**S. C. JOHNSON & SON, Racine, Wis.**

"The Wood Finishing Authorities"  
Canadian Factory—Brantford





## FIELD NOTES —(Continued)

the period of one hour daily subsequent to dismissal of students be discontinued.

"In support of this request they submit the following reasons:

- (a) The clerical work demanded after the daily instruction program is completed does not require the extra hour of attendance now enforced.
- (b) Clubs, recreational and avocational activities are not part of the course of study and therefore not compulsory. These extra activities when suggested and voluntarily accepted by the teachers will be conducted with an interest, energy and enthusiasm not now reflected.
- (c) Self-improvement courses and professional association conferences, customarily held at about 4 p. m., may be attended without the need for requesting leaves of absence from duty when there are no students in school.
- (d) The repair and cleaning of machinery and equipment does not demand an extra hour of teacher time every day. Clean-up and repair of machinery and equipment in a vocational and trade school are an essential part of the student's training and should continue to be done by students as part of their instruction.
- (e) The efficient conduct of evening high and trade schools demand the service of a considerable number of trained day school teachers. These men and women are denied the comfort of contact with home and family four evenings a week during one-half the year. The period between leaving day school and attending evening school is now too short to take the evening meal at home. Two hours and fifteen minutes are allowed.
- (f) The teachers of non-vocational subjects in vocational and trade schools are permitted to leave school at 4 p. m. daily when the students are dismissed, but receive the same salary as trade subject teachers.

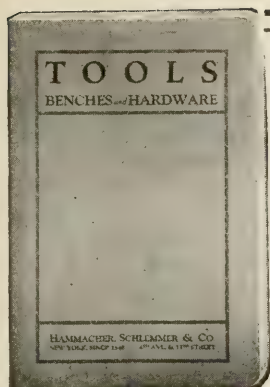
### WANT SHORTER SCHOOL YEAR

"(2) The teachers of trade subjects, science and mathematics in vocational and trade schools ask also that the students and teachers of above subjects be accorded the privilege of a summer vacation equal in length to that enjoyed by the students and teachers in all other schools in the City and State of New York. They ask specifically that the compulsory attendance of students and teachers during the month of July be discontinued.

"In support of this request they submit these reasons:

- (a) The vocational and trade schools in New York City are the only ones in New York State requiring July attendance.
- (b) The teachers of non-vocational subjects in vocational and trade schools are not required to serve during the month of July, but receive the same salary as trade subject teachers.
- (c) The absence of teachers of non-vocational subjects during the hottest month in the year and failure to reconstruct the program of the group places a double burden on the teachers of trade subjects. The program of academic instruction being discontinued, a doubling-up of groups for trade instruction results in overcrowded shops. This unfavorable teaching environment brings on a train of educational evils such as inadequate equipment and supplies for the greater number of students, constant interruption of the teaching program by groups coming into and going out of shops while other groups are at work, a lower standard of instruction, discipline and attendance, on account of the above conditions, and an absolutely intolerable strain upon the teacher. Moreover, in trade subjects the students admitted in September are more than one month behind the students entering in July, while in academic subjects the students who were admitted in July are obliged to begin their instruction with the students admitted in September. The latter condition is manifestly unfair to the July entrants. Besides, a complex shop instruction problem is created in that two different plans must be followed, i. e., one for July entrants and another for those admitted in September.
- (d) July is the hottest month in the year. After ten months of teaching service all other teachers are allowed to enjoy a well-earned rest and an opportunity to devote some of the vacation time to self-improvement work. At this period, the teacher of trade subjects in a vocational or trade school is required to bear a heavier teaching burden than at any other time of the year with the least measure of accomplishment.
- (e) It is an acknowledged fact that teachers must observe and study constantly to keep pace with educational progress. The carefully trained teachers of academic subjects are granted the time to take college extension work during the afternoon and at summer school. The teacher of trade subjects, frequently without preliminary teacher training, is in far greater need of time for observation and study. To this type of teacher the month of July gives an oppor-





# GOOD TOOLS

Are Essential For

## GOOD WORK

Since 1848 we have adhered to one policy.  
To handle only the very best in quality.

Our new Catalog No. 208 of over 300 pages is of particular value to those interested in VOCATIONAL TRAINING.  
Copy upon request.

**Hammacher Schlemmer & Co.**  
HARDWARE TOOLS AND SUPPLIES  
NEW YORK, Since 1848 4th Ave. and 13th St.

## Black Walnut for Manual Training Schools

INSTRUCTORS, Write for my special offer whereby you can have delivered to your school \$100.00 worth of exceptionally fine Black Walnut Lumber at nominal outlay, on consignment for one year. Material is all cut to popular sizes; NO waste.

Pay Only for What You Use—Return Balance Any Time

### BLACK WALNUT LUMBER

Special  
Assortments  
by  
Parcel Post

{ Cut into small dimensions especially for Turning, Carving, Cabinet Making and Inlaying. Every piece being an extra choice specimen of clear stock free from knots, checks or blemishes.

BOYS, Ask teacher to order one of my Old Black Walnut Chests for you to select some of those nice pieces to turn up, a Candlestick or a Pedestal, or a Glove Box for Sister. DON'T LONG FOR A JEWEL CASKET—just ask for the Old Chest and select what you want; make it for Mother and show her you are a Cabinet Maker, SURE.



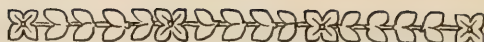
Manufactured by

**Frank R. Porter**

Washington, D. C.



**BLACK WALNUT TREE**  
250 Years Old 4 ft. Diameter



### FIELD NOTES—(Continued)

tunity to enter summer schools for teacher training and to re-enter the trade for renewed study of improved methods, applications and machinery or for investigation and development work. Teachers of trade subjects are urged to take extension courses and to renew acquaintance with their trades, yet, the time given to other teachers to pursue this work is denied to them. Summer school courses start early in July and extend into the middle of August. The trade teacher is released when these courses are two-thirds completed.

- (f) Rest, recreation and out-door exercise are necessary for the maintenance of health and renewal of vitality. When obliged to work during July and re-enter the trade for observation and study during the month of August—at best a difficult task—very little time is left for rest, recreation, etc.
- (g) Since students may elect and are not obliged to enter a vocational or trade school, many graduates of elementary schools pick out the high schools rather than the vocational and trade schools on account of the shorter school day and year in the former schools.
- (h) Graduates electing to enter vocational and trade schools decline to register for July and wait until September. Frequently students register in July but remain absent until September. The absentee problem is greater in July than at any other time of the year excepting the Hebrew holiday period.
- (j) Elementary school graduates frequently seek employment during the summer. This employment usually begins in July. Students leaving the vocational school at the end of July are thus handicapped in obtaining employment, if they wish it. Moreover, these students are frequently in need of the summer employment earnings to help keep themselves in school the remainder of the year.
- (k) Teachers of trade subjects are preparing for teaching positions in the technical and manual training high schools. Thus the vocational and trade schools are becoming teacher training schools for the high schools. The shorter school day and year, the slightly higher salary and the opportunity for study and advancement attracts these teachers.

—W. H. DOOLEY.

### SOUTHEASTERN ITEMS

A MAJOR portion of the industrial activities in the Southeast are not found grouped in or adjacent to the cities, but are even isolated from

their own kind. Some of the factors which cause this condition are supply of raw material, available water power, labor supply, and plant sites. The latter, as a rule, are quite large, covering as much as 3000 acres. The disadvantage of being several miles from a main railroad line is many times offset by one or more of the above factors.

In such cases of isolation, the entire community and all of the activities are intimately related to, and connected with, the industrial organization. Even the public schools, to a certain extent, become a part of the same organization, and the opportunities for recreation, study, and improvement are oftentimes unusual.

George W. Coggin, state supervisor of trades and industries in North Carolina, cooperating with the public school people, community workers, and industrial managers, has organized many evening vocational classes for the people in the mill communities. Eleven evening classes are being conducted at the Canton plant of the Champion Fiber Company. The courses are of twenty-four weeks duration, and the classes meet twice each week for a period of one hour and twenty minutes. The following courses are being given: Chemistry of pulp and paper making, practical electricity, shop practice, general pipe fitting, masonry, steam plant practice, blueprint reading and elementary mechanical drawing, general millwrighting, pulp making, manufacture of tannic acid, and paper making.

The instructors have been selected from the men employed at the plant. Many of the teaching staff are not only graduates of leading technical schools, but in addition, hold post-graduate degrees in their respective lines of work. M. C. Salassa was a prime mover in the organization of the work, and is acting as local supervisor.

ANOTHER PROFITABLE GROUP of classes is being conducted for the employees of the Carolina Cotton and Woolen Manufacturing Company at Spray, N. C. Last year, twenty-six classes in the various lines of textile work, such as mill calculations, weaving, designing, cloth analysis, carding, spinning, wool manufacturing and plant engineering were conducted. At present, ten classes along the same lines are in progress. This company has over 4,500 employees, which makes it rather easy to find sufficient people interested in vocational improvement to organize classes. The support which has been given for the second year, indicates that both employer and employee find it worth while. Luther Hodges is acting as local supervisor.

A UNIT-TRADE SCHOOL for printers has been organized at Greensboro, N. C. The printing establishments of the city furnished the equipment

# Manual Training Magazine

FEBRUARY, 1921

## THE HIGH SCHOOL MANUAL TRAINING TEACHER AND HIS JOB

JAMES MCKINNEY

Educational Director, American School of Correspondence, Chicago, Ill.

PERHAPS one of the main reasons for much of the unrest that now exists in the industrial world can be attributed to the fact that modern industry has reduced such a large portion of our daily work to the level of mere chores. Whenever we reduce work to a level whereby a man can go thru his daily stint without much thinking, we immediately are laying the foundation for unrest and dissatisfaction. We are apt to forget the fact that a human being is a thinking animal. It is just as natural for a man to think as it is for a man to breathe, and so when we reduce the thinking on the job to zero it gives the worker an opportunity to think and brood over many real and imaginary personal relation problems. A man can only do good work when he has convinced himself that his work is worth while and there is some satisfaction in doing it. The satisfaction is sometimes measured in terms of what other people think about him and his job, and sometimes in terms of his own standards of success. Every man does have some kind of a standard. Sometimes it is a certain wage earning capacity which is sufficient to meet the bare economic needs of his family; sometimes it is the wage question again in terms of a fuller and larger life for himself and household; sometimes it is the realization of a social service. Whatever motives may actuate a man in his work, the work itself, at least, must bring some satisfactions or else the man

is in a state of mental anarchy, and mental anarchy of the individual is the first step towards that nightmare of the social order—mob anarchy.

Perhaps, there are some good school people who do not like this term "job" applied to the teaching profession. Perhaps, there are some who feel that it may lower the ideals of the shop teacher when we talk of his work in terms of a job; however, there is less danger of the manual teacher being misunderstood in the industrial world if he can, for the moment, lay down his cap and gown and think of himself as one of the social workers in our great democracy. Furthermore, there are so many situations in the modern school world similar to those of modern industry that I have no hesitation in using this term "job" as applied to a shop teacher's calling.

### THE SCHOOL AND DEMOCRACY

The situation in the school world is perhaps not so different after all. Just now the air is filled with the challenge of democracy. The war and its problems have opened our eyes to what we lack as a democracy, and people are asking in no uncertain terms as to what our schools are doing in training for real citizenship. Not that there is any lack of vision of the function of the school in the high places of education—in fact, our leaders in the educational field were never more clear about the function and purpose of education than now. Never



in the history of education have we had a clearer conception of the school's real function in a democracy. Never have we had a group of educators who are so willing and ready to serve in the interests of democracy; never have we had a group of pedagogs who are so willing to mix with the common throng of industry in the effort to develop a finer and better people. However, as we gradually go down from the leaders in education to those who are trying to carry forward the message the vision somehow becomes less clear. It is not suggested here that the teachers are lacking in vision, but rather that the actual difficulties of putting our theories into practice are almost insurmountable. It is easy for us to talk of the socially efficient citizen as the aim of education, but it becomes an entirely different matter when we try to think of this in terms of school subjects to be taught. The difficulties of putting our theories into practice have been immense. In some cases there has been a lack of vision on the part of the supervisor of manual training, and where there is no vision we cannot expect efficient or even mediocre results. In other cases, the vision may have been clear to the leader, but one cannot expect much vision, or, for that matter, just good ordinary hard work, from a group of teachers who are being paid from \$1200 to \$1500 a year for their services.

#### WORK CONDITIONS

The one thing that is disturbing our work in manual training in the high school is the fact that a number of our teachers are in the position of the worker in industry and are getting very little real satisfaction in their work. They are like our dough boy who objected to marking time as he could not see why he should expend so much energy without getting anywhere. Our teachers are

working hard. They are succeeding in keeping a group of boys busy for 100 minutes in a week, but there seems to be no definite result that they can point to as the culmination of all their efforts.

As one comes in contact with many of the rank and file of the manual training teachers in the high schools he finds a "sort of 'what's the use' attitude;" and when one asks how things are going, the usual answer is, "Pretty fair, considering the circumstances." The circumstances are the things which are, after all, responsible for this blurring of the vision of the job. There is the great barrier of the organization problem as circumstances have forced it upon us. There is the problem of the small school which cannot afford the usual group of special teachers, and must therefore look around for some "jack-of-all" pedagogical trades, and so the manual training teacher usually has some other tasks, such as being the foot-ball coach, the science teacher, or the mathematic teacher tacked on to the work in which he is a specialist, and often in these cases the manual training work is secondary to the other interests. There is also nothing unusual in the present-day situation of having adequate equipment for only two-thirds of the pupils attending the school. Then there is also the discouraging fact of the size of the class; in many cases the teacher is given thirty to thirty-five adolescent boys to take care of, and any one who knows anything about teaching shop-work knows that this situation is impossible, if we think in terms of education and not merely keeping boys busy and out of mischief.

Then there are the problems connected with the supervisor or leader who is more concerned about his personal success than the success of his teachers and students. Large numbers of monstrosities have been forced on the heads of

manual training teachers simply because a supervisor has been too eager for personal fame. Those of us who know the inside story of the marvellous things that have been done by boys in manual training shops know that at least fifty percent of the work was done by the teacher's own hands.

There are also the demands of charity organizations, the board of education, the festival departments, the dramatic clubs, the city school exhibits, etc. These things are all fine in themselves and it is natural that demands for things to be made should come to the shop teacher because he is the man in charge of the school shops—and what are school shops for anyway? No one will question the value of a group of boys making boxes for the Red Cross or making stage property for a play, but there is some question of allowing this work to be done when the educational and social values are all stripped from it and all that is left is the dry husk of a task to be done. We have seen many school shops doing this kind of work and the atmosphere was exactly like that of a sweat shop where neither the teacher nor the students were getting the least bit of joy out of the task.

It surely behooves manual training supervisors to have the courage to question some things which are being done in the name of education in our school shops, if they are to have a group of satisfied and loyal shop teachers. The shop teachers do not object to having their boys making things that have all the possibilities of real work and seem to correlate with the other activities of the school, but they do object to these things being thrown at them without question of their pedagogical value, without considering whether the boys are able to do the work, without considering whether it is possible to make the things with equipment that the teacher has on hand. For

a teacher to take on a task of making fifty tables for the Board of Education and not have the adequate woodworking machinery for doing the task is simply playing with the troubles of discontent and lack of interest. We know of no surer way for a teacher to estrange himself with his class than have the problem of four hundred mortise-and-tenon joints to make by hand process.

#### THE ACID TEST OF THE JOB

Along with the rest of the high school subjects manual training needs to apply the acid test to its work. Both supervisors and teachers need to let go from the job of making desks, taborets, chairs, tables, etc., and sit down and ask some rather searching questions about their work. We need to be continually asking ourselves, what are this boy's needs in terms of doing his school work successfully, in terms of taking some share in the work of the home, in terms of interests in the industrial world outside of the school, in terms of what his vocation in life is going to be. This is something more than merely making furniture or teaching tool tricks. It will mean a larger job for the manual training teacher. It will mean a choice of problems based on the knowledge and insight they will give in terms of the socially efficient citizen. It will mean being a guide and counsellor in the realms of books, in so far as they pertain to his shop interests, and this is a field which we have left almost entirely out of our work. It will mean a closer study of the industrial interests of the community for the purpose of taking his boys to see how the industrial world does things. It will mean a closer study of the types of constructive work that the boy does at home unaided. In every respect, it will mean getting a closer touch with the real boy. In this conception the manual training teacher becomes the

representative of industry within the school border.

Here is surely a real task for any man. It has all the elements of the real job which makes for joy in work. The teacher will have some satisfaction in seeing a boy grow and broaden in his interests, developing a love for rendering a service and gaining in knowledge regarding his choice of a vocation. The more we get our work crowded with the task that has met the educational test the less danger is there for simply doing things with the purpose of keeping boys busy or "doing a job for somebody." We are aware, however, that even such a program as this will not answer many of the organization problems that the teacher and supervisor have to face in regards to equipment, size of classes, etc.

#### THE SPIRIT OF COOPERATION

What we would like to see is a much closer co-operation between the teachers

and the supervisors in meeting these problems. The teacher is more likely to be satisfied if he has faced the organization difficulties and had some responsibility in solving them. In the new measures of values which are being continually applied to what we call high school education, more and more is the situation becoming favorable for the manual training teacher doing a real piece of work; more and more are educators beginning to test school subjects by their social values, and no other teacher in the high school has a more fertile field of content for an actual contribution to the development of citizenship. Let us hope that the high school manual training teachers are awake to the opportunity that lies within their shop doors, because we are convinced that thru these shop windows many of our students will get their glimpse into the world of work realities and the part they are to play in them.

## TEACHING A TRADE IN THE ARMY

R. W. SELVIDGE

Professor of Industrial Education, University of Missouri

**I**N THE spring of 1919 Congress made an appropriation to carry on educational work in the army. This was a direct outgrowth of the vocational training of soldiers during the war. The plans for this work were formulated during the following summer and a number of well known civilian educators were employed to assist in carrying out this program.

Perhaps the work of greatest significance to education was the organization of the material of instruction and the methods of presenting this material.

With a reorganization of the educational program for peace time it was decided that a new study should be made

of the method of instruction. Building upon the pioneer work done during the war, a plan was evolved which presents a new technic in the teaching of a trade, if not a new point of view.

The plan is a very simple one. It seems perfectly obvious that the first step in teaching a trade is to make a list of the things a man must be able to do in order to be proficient in his trade. This is a list of the things we must teach him and it constitutes an analysis of the trade. The items appearing in the list are called unit operation. These may be loosely defined as the fundamental mechanical processes of the trade which occur in practically the same form in many jobs.



Thus, soldering is a unit operation in the tinner's trade. A job is made up of one or more of these unit operations.

Having listed the unit operations of the trade, operation sheets were prepared giving specific and concise directions for performing each of the unit operations. The directions on the operation sheets are followed by a series of questions. These questions are designed to direct the attention of the student to important points covered in the references given on the operation sheet and to direct his thinking to the reasons for performing the operations in the way indicated.

In addition to the manipulative operations of the trade there are certain topics of information with which the successful worker must be familiar and certain problems he must be able to solve. Therefore a list of information topics was prepared for each trade. These topics covered the science, drawing and other items of interest in the trade, commonly classed under the head of collateral information. Information sheets were then prepared in which the important points under each topic were set down definitely, briefly and without discussion. This is followed by a series of questions intended to arouse interest and serve as a guide in reading the available reference material.

The vocational problems are problems in science and mathematics which arise frequently in the trade. These problems the proficient worker must be able to solve. In the short time needed to learn the manipulative processes of a trade he will hardly meet with enough of these problems to find sufficient practice to enable him to solve them with promptness and accuracy. It is the purpose of the vocational problems to give the practice necessary for him to proceed with confidence to the solution of the problems of his trade.

Since the analysis sheet constitutes a

list of the things a man must be able to do in order to be proficient in his trade, it will be seen that the time element is not to be considered. The only element to be considered is his ability to perform these operations. For example, one man may learn all the operations of his trade in six months, where another may require a year to reach the same standard of proficiency.

In teaching the manipulative processes of a trade, classes should not exceed twenty men; twelve to fifteen is a more desirable number. In order to handle classes in trade work with the greatest degree of ease and success, it has been found desirable to divide the class into small groups of not more than four or five men. A leader is appointed for each of these groups and the instructor deals chiefly with these leaders. In choosing the group leaders the instructor has in mind not only their knowledge of the particular kind of work in hand, but their personality and ability to lead their groups. General directions are given to the group leaders and they are held responsible for the conduct of the men and the care of tools and materials used by their groups. By meeting these group leaders a few minutes each day the instructor soon develops in them a sense of responsibility and power of leadership. Such a plan simplifies the whole problem of instruction.

The instructor is expected to have a complete list of the jobs to be done about the camp or post that will be available for his class. He will analyze each of these jobs carefully and list the operations involved. To this list of operations he attaches a list of materials and tools required to do the job. The list of jobs is kept on file so that they may be assigned to men at any time.

The men in school should never be called upon to do a job that has not first

been approved by the instructor. A teacher should never approve a job which does not contain the elements in the performance of which he desires to instruct. Nothing can so demoralize a class as to have someone who is unfamiliar with the instructor's plan direct him to take his class and perform a piece of work which he has had no opportunity to plan and which does not fit into his scheme of instruction.

Beginners are given jobs which involve only a few simple operations. Along with the assignment of a job a man is given a trade analysis sheet and asked to look over the job and check on the trade analysis the unit operations involved in doing it. After this list is checked the instructor examines it and compares it with his own scheme for doing the job. If the list of unit operations checked contains operations which should not have been checked, or if operations have been omitted which should have been checked, the man is asked to consider the job carefully again and to discover, if possible, his error. Perhaps ignorance of certain requirements of the trade may result in the omission of some of the unit operations, and a casual question or two from the instructor usually leads the man to success in his analysis. It is often necessary to explain to the new men the meaning of the terms used in the analysis.

Having analyzed the job for the unit operations involved the next duty of the man is to plan the procedure for doing it. To do this, he should list the operations in the order in which they occur in the execution of the job. It is often true that different orders of procedure are equally good. The instructor, therefore, questions the man concerning his reasons for proceeding in the way he has indicated and, if he gives good reasons, he is permitted to follow his own plan even though it is not the usual order.

The importance of such an analysis and plan can scarcely be overestimated. The learning of manipulative processes, while important, constitutes the simplest part of the learning of the trade. The man who does not learn to analyze his job and to think constructively and quickly concerning it will always be handicapped in his work.

When the man has completed his analysis and plan for doing the job he is given the operation sheets which tell him how to perform the operations involved. These operation sheets are read carefully by him before he begins his work, and are at hand for reference, if needed, at any time during the progress of the job.

When men are sent out from the shop to do a piece of work they are in charge of the instructor or of the most competent man available in the group and take along with them the instruction manuals and the necessary tools and materials, if such can be determined before going to the job.

The instructor sets aside a period for discussion of the topics of information and the problems connected with the trade. This hour is used to take up the questions the men may raise concerning the operations or the general principles underlying their work. The instructor never hesitates to teach a man anything he needs to know, whether it is on the schedule or not.

It is necessary for men to perform certain operations a great many times in order to become proficient in them. When they have become proficient in any operation of the trade they are given a proficiency mark and, while these operations may subsequently occur many times in their work, the instructor seeks to give them jobs in which new operations occur. Men are not regarded as proficient in any operation until they can perform it as well as the average workman in that trade.

The manuals are not intended as a substitute for the instructor, but as a help to him. The operation sheets are simply carefully worked out plans for

2. It lists the essential topics of information in the trade.

3. It requires the student to analyze his job in the terms of the operations of the trade.

4. It requires the student to make a definite plan of the order of procedure.

5. It enables the class, or individuals of the class, to handle any kind of a practical job within the range of their ability and at the same time get the utmost of the educational elements out of it.

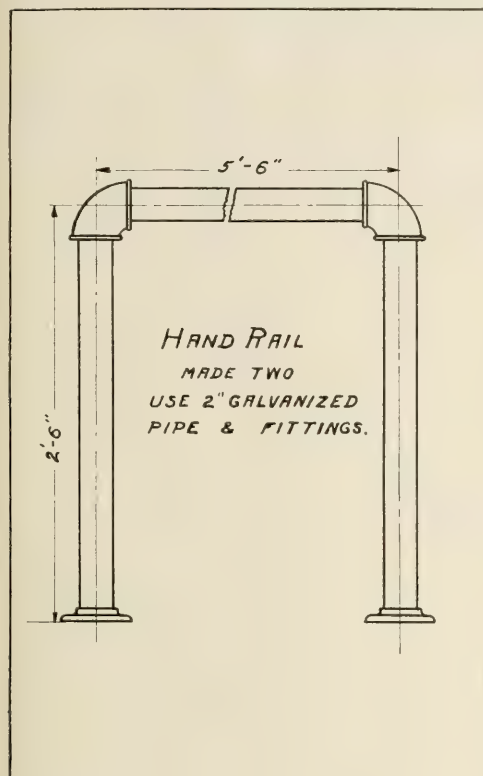
6. It eliminates the time element. When a man has become proficient in an operation he is given a proficiency mark. When he is proficient in all of them his training is completed without respect to time.

7. A statement can be given of exactly what a man is *able to do* and not that he has had so many months of training. This enables the employers and labor organizations to place him more accurately in industry.

8. The topics of information and the vocational problems are taught by the shop teacher in the shop.

9. The analysis of a trade shows that a very large number of the operations of the trade are only semi-skilled in character. We are therefore able to direct the training to the highly skilled operations rather than the semi-skilled operations which require little time to master.

As an illustration of how the work is handled two examples are given. One job is making a hand rail the other is making a shower bath curtain. In these examples the operations involved are checked and the order of procedure indicated on the analysis and the required operation sheets are assembled in order just as the student would do it. Other jobs are handled in a similar manner.



teaching the various operations of the trade and, when the operation sheets for any job are assembled, they constitute a plan for teaching the operations involved in that job, thus relieving the teacher of a vast amount of labor.

It is impossible to give within the limits of a magazine article, a full explanation of the plan or the principles upon which this work is based. The principal points, however, may be stated briefly.

1. It gives an analysis of the trade on the basis of what a man must be able to do.



VOCATIONAL SCHOOLS, U. S. ARMY  
 PLUMBING  
*Trade Analysis*

Name John Smith  
 Date Nov. 1, 1920  
 Job Making Pipe  
Hand Rail

*Instructions:*

FIRST: Check at the left each unit operation involved in the job.

SECOND: Place in the column at the right the numbers checked in the order in which the unit operations should be performed.

UNIT OPERATIONS	ORDER OF PROCEDURE
1. Making plan and lay-out sketch.....	
✓ 2. Making bill of material and tools needed for the job.....	2
3. Digging trench.....	8
4. Laying tile sewers.....	9
5. Cutting tile sewer pipe.....	11
6. Inserting new joint in old tile sewer.....	
7. Tapping mains and pipes.....	
✓ 8. Cutting wrought iron pipe.....	
✓ 9. Threading pipe.....	
10. Reaming pipe.....	
✓ 11. Making up or screwing together pipe and fittings.....	
12. Bending wrought iron, steel and brass pipe.....	
13. Supporting pipe and fittings.....	
14. Cutting cast iron pipe.....	
15. Caulking joints.....	
16. Testing roughing-in for leaks.....	
17. Drilling.....	
18. Cutting lead pipe and sheet lead.....	
19. Dressing sheet lead and lead pipe.....	
20. Soldering lead.....	
21. Soldering block tin.....	
22. Wiping joints.....	
23. Bending and shaping lead pipe and sheet lead.....	
24. Sweating lead and tin joints.....	
25. Tinning soldering iron.....	
26. Tinning brass, copper and iron.....	
27. Soldering tin plate, brass and galvanized iron.....	
28. Making wiping cloth.....	
29. Lighting gasoline furnace and torch.....	
30. Flashing or making roof connections.....	
31. Cutting brass and nickel plated pipe.....	
32. Setting water closets, urinals and slop sinks.....	
33. Hanging flush tanks, lavatories, urinals, kitchen sinks, etc.....	
34. Adjusting flush tanks and flushometers.....	
35. Inserting new joint in old soil line.....	
36. Adjusting and repairing faucets and valves.....	

37. Locating and relieving stoppage in drains.....
38. Supporting and fastening gas drops and outlets.....
39. Removing scale from water backs and coils.....
40. Freezing water in supply pipe line.....

Operation Sheet No. 2.

## VOCATIONAL SCHOOLS, U. S. ARMY

## PLUMBING

## MAKING BILL OF MATERIAL AND TOOLS NEEDED FOR THE JOB

*References:*

Catalogues of Plumbers' Tools and Supplies.

*Directions:*

Carefully read the drawings, specifications and other directions pertaining to the job. From these make a list as follows:

1. Bath and toilet room fixtures and fixture trimmings. When listing fixtures it is often necessary to give name of manufacturer and also catalogue name and number.
2. Kitchen fixtures and fixture trimmings.
3. Basement fixtures, including laundry fixtures hot water tank, gas heater, automatic pump, pressure tank and basement fixture trimmings.
4. Quantity and size of sewer pipe and fittings.
5. Quantity of sand and cement for sewer pipe.
6. Quantity and size of soil pipe and soil pipe fittings.
7. Quantity and size of cleanouts, back water traps and cess pools.
8. Quantity of lead. Estimate one pound for each inch in diameter of each caulked joint.
9. Quantity of oakum. Estimate eight to ten pounds for each one hundred pounds of lead.
10. Quantity of gasoline. Estimate two gallons for each one hundred pounds of lead.
11. Quantity and size of roof flashings.
12. Quantity and size of galvanized soil waste and vent pipe.

13. Quantity and size of drainage fittings.
  14. Quantity and size of cast iron vent fittings.
  15. Quantity and size of wrought iron or steel pipe, fittings and nipples.
  16. Quantity and size of straps, hooks, hangers, screws and gaskets.
  17. Quantity, size and weight of lead pipe, bends traps and ferrules.
  18. Quantity of solder. Estimate one pound for each one inch or less of diameter of each wiped joint.
  19. Quantity and size of brass ferrules, nipples and bushings.
  20. Quantity and size of brass valves, stop cocks, drain cocks, etc.
  21. Quantity of putty, dope, paste, oil, etc.
  22. Quantity and size of gas pipe and gas fittings.
  23. Quantity and size of smoke pipe for gas heater.
  24. List all tools needed for the job, including pipe vise, bench and other heavy equipment, when needed.
- Questions:*
1. How are the sizes of pipe designated?
  2. How are the sizes of fittings designated?
  3. How are the sizes of fixtures designated?
  4. Is there any difference in the fittings for gas pipe and water pipe?
  5. What kind of materials are the fittings made of? Why?

Operation Sheet No. 8

## VOCATIONAL SCHOOLS, U. S. ARMY

## PLUMBING

## CUTTING WROUGHT IRON PIPE

*References:*

Dibble, Elements of Plumbing, pp. 110-117.

*Directions:*

1. To determine the lengths of pipe to be cut in making up a job with standard fittings, subtract from the distance between centers of the two fittings the size of the side openings of each fitting. When valves, unions or other than standard fittings are used, add 1" to the distance between fittings to provide  $\frac{1}{2}$ " extension of the pipe into each fitting. This is the amount usually allowed for pipe

2 inches or less in size. On work requiring unusually accurate measurements, test the fittings to determine the depth to which the pipe will screw and cut each piece of pipe to proper length as the job is made up.

2. Clamp pipe in pipe vise.
3. Mark off length to be cut.
4. Apply pipe cutter so that cutting wheel rests on the line.
5. Use care to start cutter at right angles to length of pipe.

6. Force cutting wheel against pipe by turning handle of cutter.

7. Apply oil to line of cut and revolve cutter around the pipe.

8. Before each revolution force the cutting wheel deeper into the pipe and continue until pipe is cut off.

9. If the pipe is to carry liquids or gases, ream out the burr left by cutter.

#### Questions:

1. What types of wheel cutters are in common use?
2. What is the danger of putting too much pressure on cutting wheels?
3. How does the cutting affect the inside diameter of the pipe at the end?
4. What is a square end cutter? On what kind of pipe is it used? What are some advantages of a square cutter?

Operation Sheet No. 9

### VOCATIONAL SCHOOLS, U. S. ARMY

#### PLUMBING

##### THREADING PIPE

#### References:

Dibble, Elements of Plumbing, pp. 110-117.

Gray, Plumbing Design and Installation, pp. 73-78.

#### Directions:

1. Clamp pipe in pipe vise.
2. Place in a stock a set of dies and a bushing corresponding to the size of pipe to be threaded.
3. Slip bushing over end of pipe until the dies touch. Squirt oil on both the pipe and the dies. Grip the stock with both hands near the dies, turn stock slowly to the right, pushing hard against pipe until dies begin to cut. If the stock has a leader screw instead of a bushing, clamp leader screw to pipe before beginning to cut thread.
4. Keep dies well oiled. Rock the stock backward every two or three turns until thread is finished.
5. Remove dies from pipe by turning to the left. Strike the pipe with the stock to knock chips off. Inspect threads.

6. To cut left hand threads use left hand dies and turn to left.

#### Questions:

1. How are sizes of dies marked?
2. What is the meaning of the letter in connection with the mark?
3. Why should pipe dies *not* be reversed in the stock?
4. How does a pipe thread differ from a bolt thread?
5. How far should the thread be cut on a pipe?
6. What kind of oil is best for thread-cutting?
7. What happens to the die or to the thread, if no oil is used?
8. Why is it best to run a die over old threads?
9. Why is it necessary to rock the stock backward every two or three turns?
10. How can a pipe thread be cut deeper with a die that is not adjustable?

Operation Sheet No. 11

### VOCATIONAL SCHOOLS, U. S. ARMY

#### PLUMBING

##### MAKING UP, OR SCREWING TOGETHER PIPE AND FITTINGS

#### References:

Dibble, Elements of Plumbing, pp. 115-117.

Gray, Plumbing Design and Installation, pp. 75-78.

#### Directions:

1. Screw fittings on pipe by hand. When practicable, hold pipe in a pipe vise and use a pipe wrench to draw fittings up tight. A second pipe wrench is sometimes used to hold the pipe instead of a pipe vise. Experience alone can determine how tight to turn fittings as too much pressure will

split them. It is good practice to draw fittings as tight as possible using a

- 6" wrench for  $\frac{1}{4}$ " pipe.
- 10" wrench for  $\frac{3}{8}$ " and  $\frac{1}{2}$ " pipe.
- 14" wrench for  $\frac{3}{4}$ " pipe.
- 18" wrench for 1" and  $1\frac{1}{4}$ " pipe.
- 24" wrench for  $1\frac{1}{2}$ " and 2" pipe.

For brass and nickel plated pipe use a strap vise and a strap wrench.

2. True threads will form a perfect joint but in practice dope, composed of red lead, white lead,



lithrage or graphite in oil is often used to insure a tight joint. The dope should be applied to the *threads* of the pipe and *not* in the *fittings*.

3. To connect two sections of pipe with a right-and-left coupling, screw coupling on right hand thread and mark distance with chalk. Take off the coupling and count the threads that were covered. Do same on left hand threads and count threads covered. Screw coupling on the piece with the greater number of threads until the same number of threads is exposed on both pipe ends. Then engage the free end and both will tighten at the same time.

4. A running thread joint formed by continuing to turn stock and die as far as desired, requires a lock nut to make a firm joint.

5. A union is ordinarily used when two lines of pipe are to be connected.

#### Questions:

1. Why should dope be applied to the pipe rather than to the fittings?
2. Why should the use of dope be avoided on brass and nickel plated pipe work?
3. What may be used in place of ordinary dope on brass and nickel plated pipe work?
4. What is the advantage of connecting lines of pipe with a union?
5. What is the purpose of the gasket in a union?
6. Why should a union with a gasket never be attached to a pipe that is to be concealed?

### VOCATIONAL SCHOOLS, U. S. ARMY TEXTILE DEPARTMENT CANVAS WORKER *Trade Analysis*

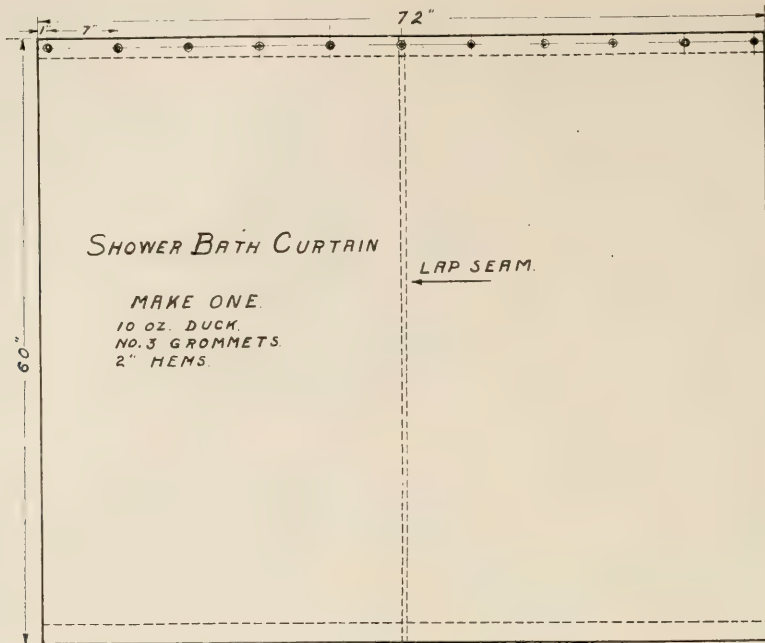
Name Tom Jones  
Date Nov. 1, 1920  
Job Making Shower Bath  
Curtain

#### Instructions:

FIRST: Check at the left each unit operation involved in the job.

SECOND: Place in the column at the right the numbers checked in the order in which the unit operations should be performed.

UNIT OPERATIONS	ORDER OF PROCEDURE
✓ 1. Making bill of material.....	1
2. Laying out and cutting of patterns.....	3
✓ 3. Laying up and marking cloth for cutting.....	5
4. Cutting cloth with electric cutter.....	7
✓ 5. Hand cutting of cloth.....	9
✓ 6. Marking cut material.....	6
✓ 7. Plain stitching and plain seaming.....	15
8. Fell seaming.....	14
✓ 9. Hemming.....	
10. Binding.....	
11. Special machine stitching.....	
12. Hand sewing.....	
13. Sewing in metal rings.....	
✓ 14. Attaching hardware or metal parts.....	
✓ 15. Punching cloth.....	
16. Riveting.....	
17. Finishing the end of rope.....	
18. Rope splicing.....	



Operation Sheet No. 1.

VOCATIONAL SCHOOLS, U. S. ARMY  
TEXTILE DEPARTMENT CANVAS WORKER  
MAKING BILL OF MATERIAL

*Directions:*

1. Carefully read the drawings, specifications, or other directions given to produce the article required.

2. From drawings, specifications, or other directions make a list of:

*First:* Kind and quantities of cloth required, being especially careful to choose the width that can be cut with smallest waste. Allowance should be made for width of seams, hems, and the turning of goods. Care must be taken to have the warp direction of the cloth so placed that it receives the greatest strain when the article is in use.

*Second:* Kind and quantities of webbing.

*Third:* Kind of thread.

*Fourth:* Kind and quantities of metal parts.

*Fifth:* Kind and quantities of rope.

*Questions:*

1. Why is it best to read the drawings and specifications and list one kind of material at a time?

2. Why should list of materials be checked with the drawings and specifications?

3. How can the width of cloth, to cut with the smallest waste, be determined?

4. What is meant by metal parts, and what other term is sometimes used for describing the metal parts of canvas articles?

5. What should determine the allowance to be made for width of seams, hems and the turning of goods?

6. What is meant by the warp direction of cloth? What is meant by the filling direction?

VOCATIONAL SCHOOLS, U. S. ARMY  
TEXTILE DEPARTMENT CANVAS WORKER  
LAYING UP AND MARKING CLOTH FOR CUTTING

*Directions:*

1. A roll of cloth should be mounted at the end of the cutting table and so placed that the cloth can be unwound easily. If the cloth is in the form of a bolt, this should be placed at the end of the cutting table and in a way that it will readily unfold.

2. Knowing the number of the finished articles to be made, arrange and mark the outlines of the patterns upon a single piece of paper in order to get the best arrangement to avoid waste of material. Goods sometimes varies in width and the paper should be of the same length and width as the narrowest layer of cloth laid up for cutting. Preserve this paper for future reference, as it gives the proper pattern arrangement. When a selvage edge must come at a definite place in a finished article, the pattern should be placed on the cloth so as to give this result.

3. From the arrangement, as shown on the paper, make thin and distinct lines along the edge of the patterns upon a single piece of cloth to be cut.

4. Lay upon the cutting table a sufficient number of layers of cloth to give the number of pieces wanted, or as many as can easily be cut. Laying up is commonly done by hand, but a laying-up machine is also employed for this purpose.

5. Place one selvage edge of each layer of cloth parallel with, and the same distance from, the nearest long side of the cutting table. This side of

the lay (pile or layers of cloth) should show an even surface. When all these layers are to be cut at one time with an electric cutting machine, the marked piece of cloth should be placed on top of the pile to serve as a guide during the cutting. If the goods are to be cut with scissors (shears), use a template to mark the small pieces to be cut. Each small piece will then show the pattern outline and also the location of holes, buckles, hooks, rings, etc.

6. After the marking is completed, tie the patterns together and return them to their proper place reporting any injured pattern or any error in pattern dimensions.

*Questions:*

1. Can the cloth be laid up by one person? How?
2. Why is a laying-up machine used and what advantages are derived from its use?
3. Why should a sketch be made of the arrangement of the patterns?
4. Why is it necessary to take great care in laying up cloth?
5. Why is it necessary to mark the cloth with a thin line?
6. What is the best kind of pencil to use for marking?
7. What direction of cloth is usually the strongest?
8. What is the selvage of the cloth?
9. What injury, or change may occur in the pattern?

VOCATIONAL SCHOOLS, U. S. ARMY  
TEXTILE DEPARTMENT, CANVAS WORKER  
HAND CUTTING OF CLOTH

*Directions:*

1. Lay the goods to be cut on a smooth level table, and with scissors cut a clean smooth edge, closely following the lines drawn on the cloth. Take great care not to cut beyond the end of the lines.

2. If a knife is to be used, place the goods to be cut on a cutting block. Hold the pattern or straight-edge in position firmly and cut along its edge so as to leave this cut edge of goods smooth

and clean. Slope the knife in the direction of the cutting but do not lean it toward or from the pattern. The best knife blade for cutting is known as the "sharp point."

3. If a cutting block is not available, place a thin board, or some other suitable material between the table top and the goods to be cut. This protects the surface of the table.

*Questions*

1. Why should a smooth level table be used?



2. What kind of knife point is best suited for cloth cutting? Why?

3. What is a cutting block? How will it be damaged if the knife is not held properly when

cutting?

4. What size scissors should be used? Why?

5. Why is it necessary to have cutting tools sharp and clean?

Operation Sheet No. 7.

## VOCATIONAL SCHOOLS, U. S. ARMY TEXTILE DEPARTMENT, CANVAS WORKER

### PLAIN STITCHING AND PLAIN SEAMING

#### *Directions:*

1. Select the sewing machine to be used, and carefully read the instruction book, published by the maker of the machine, if such a book is available.

2. Oil and clean the sewing machine.

3. Put in the needle and thread it.

4. Wind the bobbin, if a machine requiring a bobbin is used, and place it in the machine.

5. Sew a few rows of stitching on a scrap of the same kind of cloth that is to be used in making the article. Take great care that the tension of the thread and the number of stitches per inch are correct and that a good row of stitching is made.

6. In plain seaming the row of stitching should be not less than one-quarter of an inch from the edges of the goods, and always deep enough to hold the stitches in place.

7. A plain lap seam is commonly used to join together wide pieces of cloth, such as is used in making tarpaulins, tents, etc. This seam is made by laying a long edge of one piece over the long edge of another piece the desired distance, and then sewing the two pieces together. A row of stitching must always be placed near the edge of each piece, but in some instances three or more rows of stitching should be made. If a single needle machine is employed, two or more operations are necessary,

whereas a multiple needle machine will make all the rows of stitching in one operation. A multiple needle machine may have two, three, or as many as twelve needles.

8. Place the goods to be sewed under the presser foot and begin the stitching. Hold the free end of the upper thread until the first two or three stitches are made.

#### *Questions:*

1. What kind of oil should be used for the sewing machine? Why should all excess oil be removed before commencing the stitching?

2. What size and kind of needle should be used? Why?

3. What size and kind of thread should be used? Why?

4. What is a bobbin?

5. How is the thread tension regulated?

6. How can the stitches per inch be increased or decreased?

7. How can the free end of the upper thread be held when starting the stitching?

8. Why can a row of stitching be placed very near the selvage edges of goods?

9. Why must a row of stitching be placed not less than one-quarter of an inch from the edge of the goods?

Operation Sheet No. 9.

## VOCATIONAL SCHOOLS, U. S. ARMY TEXTILE DEPARTMENT, CANVAS WORKER

### HEMMING

#### *Directions:*

1. When making a hem on heavy canvas or duck, place the goods to be hemmed on a flat surface and turn the edge of the goods, where the hem is to be made, to a depth of about  $\frac{3}{8}$ ". Place this folded part upon a flat piece of iron, usually called a bench iron, and pound the turned edge with a cobbler's hammer. This makes a distinct crease. This fold should stay at least partially turned until the second folding is done.

2. Make a pencil line on the goods, to show the

width of the hem, and then place the folded edge up to this mark. Pound, or rub, this second fold, as described above, and sew a row of stitching about  $\frac{1}{8}$ " from the edge of the first fold.

3. When a particularly good hem is to be made, beeswax or some other good adhesive, is applied to the full width of the hem. This serves to make the two folds of the hem stay in place, and also gives the hem a better finished appearance. The adhesive should not be placed beyond the width of the hem.

4. Hem light weight goods with a hemmer. Select

one of the proper size and fasten it to the machine. Insert the edge of the goods in this attachment and it will turn the hem as the goods passes through it.

5. A hem can be folded by hand as the stitching is being done. This however, is a rather difficult operation and is usually not economical when large quantities of goods are to be hemmed.

#### *Questions:*

1. What is the purpose of a hem?
2. Why should the goods be placed on a flat surface?
3. Why is a cobbler's hammer used?
4. How is the width of the hem marked?

Operation Sheet No. 6.

### VOCATIONAL SCHOOLS, U. S. ARMY TEXTILE DEPARTMENT, CANVAS WORKER MARKING CUT MATERIAL

#### *Directions:*

1. Take the pile or cut of goods to be marked, keep the pile uniform, and place it on a smooth level table large enough to hold the pile and the marked pieces as they are removed from it. The number of pieces in the pile depends upon the number of layers of cloth cut at one time. As many as thirty layers are often cut at once.

2. Lay the template on the top piece so that its outside edge is even with the edge of the goods. Hold the template firmly in this position and with a sharp pencil mark all places such as holes, slots, etc., which the template contains. Remove this properly marked piece, place the template on the next piece and mark it. Repeat this operation until each piece in the pile is correctly marked.

3. Keep the template from moving by placing a weight upon it, or by temporarily securing it to the cloth. Several small steel points are sometimes inserted at different places, in wood, leather, or met-

al patterns, and when these come into contact with the cloth the pattern is easily held in place while the marking is being done.

4. Make all lines distinct, and close to the template, taking the greatest care that the template does not move during this marking.

5. When large numbers of pieces are to be marked, it is sometimes practicable to use a printing press. When this is employed one piece is usually marked at a time, but more rapid progress is made than by the template method.

#### *Questions:*

1. How can a pattern be made to answer the purpose of a template?
2. How can the template be prevented from moving?
3. Why is it important that the template should not move during the marking?
4. How can the lines be properly drawn?

Operation Sheet No. 15.

### VOCATIONAL SCHOOLS, U. S. ARMY TEXTILE DEPARTMENT, CANVAS WORKER PUNCHING CLOTH

#### *Directions:*

1. For hand punching use a hollow punch and block or a spring belt punch.

2. When a power press is used select male and female dies of the size desired and set and adjust them in the machine.

3. Always use a punch block when a round belt punch is used. Use a wood or rawhide mallet for striking the head of the punch. If a steel hammer is used, take care not to injure the punch head.

4. Make sure all tools and dies are in good condition.

5. When grinding a punch take care not to heat the steel enough to draw the temper.

#### *Questions:*

1. Of what materials are punch blocks made? Why?
2. What care must be taken when using a round belt punch?
3. Why are different methods of punching used?
4. Why should care be taken not to use too great pressure upon punching tools?
5. What results must be obtained in the punching of cloth?
6. How are male and female dies properly placed in the power press?
7. What precautions must be exercised when using the power press?

VOCATIONAL SCHOOLS, U. S. ARMY  
TEXTILE DEPARTMENT, CANVAS WORKER  
ATTACHING HARDWARE OR METAL PARTS

*Directions:*

1. Such metal parts as buckles, snaps, hooks, rods, tack buttons, rings, grommets, eyelets, etc. are known as hardware. They are securely attached to cloth in many ways, depending upon the kind and shape of the hardware used. In all cases the work must be neatly done and sufficiently strong for the purpose intended.

2. Attach buckles, snaphooks, hangerhooks, "D" rings, etc. by putting a piece of webbing or cloth through or over the place made for it in the hardware, and then sewing this webbing or cloth to the article being made. The sewing is sometimes reinforced by riveting.

3. Some kinds of hardware, such as rings, hooks, etc., are sometimes sewed directly to a part of the article. There are also other kinds of hardware such as grommets, fasteners, etc., that can be securely attached without sewing by means of rivets

or by pressing together the parts of the metal attachments. Take care to attach metal parts at the exact points indicated on the article.

*Questions:*

1. Of what material or materials should the hardware be made? Why?
2. What kinds of hardware are attached without the use of a sewing machine? How?
3. In addition to sewing machines what other kinds of machines are used for attaching hardware?
4. What is an eyelet? A Grommet?
5. What is a tack button? A "D" ring?
6. What are fasteners?
7. What is an end clip? Why is it used?
8. How should the webbing or cloth that holds the metal part be attached in order to be strong enough?
9. How can a metal part be attached when an additional piece of webbing or cloth is not required?

COOPERATION IN THE SCHOOL

J. J. EATON

Director of Industrial Arts, Yonkers, N. Y.

**M**OST of us disapprove of the old idea of efficiency which cold-bloodedly ignored any of the human elements which enter into activities of any sort, especially situations where mutual effort is required. We demand that the meaning of efficiency shall no longer be impersonal but that it shall recognize, include, and provide for all human values connected with each undertaking that it represents.

Thus, in matters relating to the school, if we are to be truly efficient, we must seek to cooperate with one another; there must be an esprit de corps; we must pay special attention to the morale of the teaching and student body.

This article deals with faculty relations, or rather with cooperation between the teaching members of the faculty and the principal. The object here is to point out one way in which the desired coopera-

tion may be obtained. If it is understood just what duties of the principal are clearly within his own field, what responsibilities may be said to be entirely those of a teacher, and what are mutual duties, a good basis for cooperation may be obtained. The three parts of such a classification follow:

1. Duties that are clearly those of the principal
  - a. Organization
  - b. Administrative matters connected with superintendent of schools.
  - c. Administrative matters connected with
    - general details
    - Selection of teachers
    - Building
    - Office records
    - Reports
    - Agreements with unions and employers
    - Policies regarding forms of courses such as
 

Part-time	Cooperative
Trade	Pre-trade
Evening	Relations with the janitor



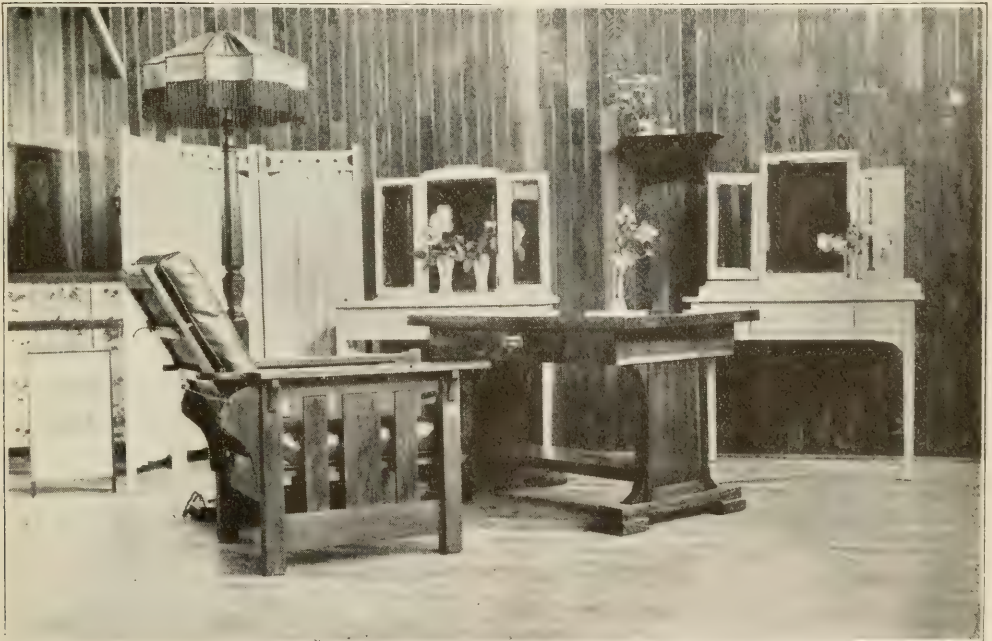
- d. Supervision and inspection
    - Rating of teachers
  - e. Federal, state, and city laws interpreted and executed
  - f. Special problems of discipline
  - g. Relations with truant officer
  - h. Dealings with state officials
  - i. Dealings with Board of Education
  - j. Dealings with parents and public
  - k. Fire drills
  - l. Dealings with health officer
  - m. Problems of the curriculum
- 2. Duties that are clearly those of the teacher
    - a. Execution of the daily program
    - b. Interest and attention
    - c. Specific advancement of the pupil
  - 3. Mutual responsibilities
    - a. Within the shop or classroom
      - Shop records
      - Care of equipment
      - Stock
      - Daily program
      - Course of work
      - Discipline
      - Shop talks
      - Methods of instruction
      - Standards
      - Daily shop plans

## Tests

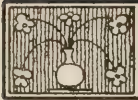
## Health of pupil

- b. Outside of shop or classroom
  - Care of school property
  - Passing in the hall
  - General hall duties
  - Budgets
  - Surveys
  - Disposal of products
  - Health of pupil
  - Morals of pupil
  - Development of teacher
  - Tardiness and irregular attendance

Doubtless all of the duties and responsibilities are not recorded. Furthermore some of the minor classifications may be misplaced. The main thought here is to see to it that the mutual responsibilities of teacher and principal are understood and shared for the best interest of the pupil. With this understanding as a basis, cooperation is more easily obtainable; in a large school it is possible that a teacher's council might be necessary, but in a small school the entire faculty could act in that capacity.



PART OF THE MANUAL TRAINING EXHIBIT FOR THE YEAR 1919-20  
AT THE HIGH SCHOOL, KING CITY, CALIFORNIA, J. J. WATTS, TEACHER



## EDITORIAL REVIEW FOR THE MONTH



### THE BUREAU OF EDUCATION CONFERENCES

**T**HIS is the month of the great annual conventions of the societies that are trying to solve the problems of vocational education. In our news columns during the past two months have appeared items calling special attention to the programs of the Minneapolis meeting, February 10-12, and of the Atlantic City meeting, February 24-26.

The Middle West meeting will be almost at hand when this paragraph reaches the readers, but it may not be too late to call attention to the dinner-conference on industrial education to be conducted by the U. S. Bureau of Education at 6:30 on the evening previous to the opening of the convention at Hotel Curtis, Minneapolis. The general topic will be "Organization of Instructional Material in Individual Units." "Why the part-time school must adopt individual-instruction units" will be discussed by Charles F. Perry of Milwaukee; "Meeting the needs of the individual student thru properly organized instructional material" by L. R. Alderman, educational adviser for the Navy Department; and "The part-time class: A new task for a new teacher" by Dr. George E. Myers of the University of Michigan. Dr. William T. Bawden will be the chairman of the conference. If you want to reserve a plate for this dinner write to L. F. Melony, Hotel Curtis, Minneapolis, so that it will reach him before 6 P. M. on February 8th.

The Bureau of Education will conduct a similar dinner conference at Atlantic City on the evening of February 23rd. It will be held at Hotel Watkins at 6:00 P. M. Dinner will be served at 6:30 and reservations must be received by Linton

B. Arnold, manager, Hotel Watkins, Atlantic City, N. J., before 6:00 P. M. on February 22nd. The general topic for discussion at this conference is "The Contribution of Correspondence Instruction Methods to Industrial Education." The first speaker will be Robert B. Keller of the International Correspondence Schools, who will speak on "Suggestive features of correspondence instruction methods;" Russell N. Keppel of the Standard Oil Company will discuss "Instructional material adapted to classes of adult students in industrial plants;" and Charles R. Allen will give "Suggestions to teachers: development and use of supplementary instructional material in vocational training work."

In both of these Conferences considerable time will be allowed for free discussion. These two programs make it clear that the U. S. Bureau of Education is especially interested at this time in the discussion of the newer methods that are being employed in industrial education. The purpose of these two meetings seems to be to speed up the sifting process, and so help the industrial teachers of the country to find out, as soon as possible, what changes in methods are going to be necessary to most fully meet new conditions—new ideals.

### THE "INTENSIVE PLAN" IN NEWARK

**A**NYONE who has become interested in the "intensive plan" of organizing manual arts instruction in the public schools as presented in this Magazine during the past year,—first by an editorial article in the March, 1920, number, and then by an article by Supervisor Allen D. Backus in the July number, will be glad to learn of the next step in the development of this plan in Newark, N.

J. Mr. Backus writes under date of Dec. 20th.

"It may interest you to know that on the first of February we are to have the manual arts taught 'intensively' thruout the city. The unequal time allowance for 7th and 8th and 5th and 6th grades created so many difficulties in organization that a uniform allotment of 60 minutes has been given to all grammar grades for manual training, sewing, cooking and art."

This means that manual training will get five 60-minute periods a week for five consecutive weeks, and then will give way to art and music until its turn comes around again.

We are so thoroly convinced of the saneness, practicability and increased educational efficiency of this plan as well as its wonderful relief to the manual training teacher who has so many students for such short periods—mere scraps' of of time—that we recommend that Mr. Backus be kept busy for the next two weeks answering inquiries from our readers and sending out copies of Circular No. 56 addressed to school principals of Newark by Superintendent David B. Corson, which shows just how the new scheme provides in a better way, as we believe, for English, arithmetic, geography, physical training, and all the other fundamental studies, as well as for the manual arts. From our point of view it shows a simplification of program that seems so logical that the wonder is that it had not long ago been applied to a big public school system.

#### GENERAL EDUCATION, BUT DIFFERENT

AT THE meeting of the Illinois Manual Arts Association held at Springfield during the holiday week two addresses and most of the discussion centered around part-time school problems. The reason for this is easily found in the

fact that in Illinois part-time work is just beginning to take root under the optional-mandatory law, and next year will become compulsory. Both speakers who presented this subject, Jesse F. Kolb, assistant state supervisor of industrial education, and S. J. Vaughn, professor of industrial education at the University of Illinois, pointed out that during the present and the coming year and until September 1922 the part-time school work is for boys and girls below 16 years of age and therefore is essentially general rather than vocational in character, yet to meet the expectations of the employers, the boys and their parents, as well as to harmonize with the best thought on part-time instruction, the work must be different from that done in the regular day schools. This is as true of the shopwork as of any other subject in the part-time course. While the principles taught may be the same as taught in the regular school, the things made and the viewpoint must be different. "Boys rebel," said Mr. Vaughn, "when they have to make the same old things they used to make in the manual training shop." The employers, too, expect to see some more definite connections between the shopwork in the part-time school and the industry than they are in the habit of recognizing between manual training school work and manufacturing for the market. Shopwork that is obviously related to industry is desirable as a substitute for some of the older courses, even if it is not as rich in fundamentals. It may be a compromise, but it is desirable. In this time of restlessness we must strive to meet some of these expectations, even tho it be by compromise. Later it may be possible to be governed only by the answer to this question: "What is best for the pupils?"

Mr. Vaughn pointed out that in the past the manual training men have been



criticizing the public schools. "Now they have handed over to them on a platter one of the biggest of the public school problems with this statement: 'Here, take it; it is hot. We don't know what to do with it.' It is the opportunity of an age for the shop men to roll up their sleeves and show what can be done." Boys and their parents thought that they were going to have something real in this part-time work. The shop teacher must make them feel that they get it."

#### SHOP TEACHERS FOR PART-TIME CLASSES

THE inevitable is taking place. It has been clear to some of us from the start that, considering the country as a whole and the problem in all its bearings, the men who are trained and successful teachers of manual training constitute the best group from which to pick a large proportion of the teachers of part-time work. In the first place, they have a sympathetic relation with industry and manufacturing processes. They are the best link that is available connecting the schools and the industries. They know more of both than any other one group of teachers. In the second place, they know how to teach both by the individual method and by the class method. They can teach large groups or small groups or individuals; they can adapt their method to a variety of conditions. In the third, place, they know how to get the good will of boys. They realize the importance of keeping sympathetic relations with their pupils, so that they may have a deeper influence and so that they may allow freedom of action in class without losing control.

The one quality that many of these do not possess in sufficient degree to satisfy the federal law for shop teachers is journeyman experience at a trade. But it is no wonder that, possessing so many of the

requisite qualifications, they are quite generally looked upon as more satisfactory teachers for part-time work, especially with boys below sixteen years of age, than are the men who are available from industry, even after taking short training courses. It is not surprising therefore to find officials stretching the law as far as their consciences will allow them in favor of the successful manual training teacher.

It was very interesting to the manual training teachers at the recent meeting in Springfield to hear Assistant Supervisor Kolb advise the manual training teachers to spend their summer vacations in the trade and to inform them of the fact that in emergency cases some successful manual training teachers with two summers of journeyman experience had received temporary appointments on condition they would get more experience soon. This seems to us to be a good healthy condition of affairs. Every teacher ought to do something with a purpose in the summer time and, for the sake of his pupils and his professional growth, that ought to be different from what he does during the school year. Why not trade experience instead of summer school work for a year or two, even tho he does not get an appointment in a part-time school? A summer or two, or even three, would be good for almost any teacher of manual training.

A contrast in attitude between the preparation of the manual training teacher and that of the man who received his practical training in the Army schools during the war was brought out by the same speaker, who said much of the Army training had to be discounted about 100 per cent because it was usually too highly specialized.

Again it becomes clear, as we have so often maintained, that a man needs a relatively broad training, even in a trade,

in order to be a satisfactory teacher. It is not merely a question of years of experience, but a question of the kind and quality of experience, and of viewpoint. Just as a teacher of arithmetic should know algebra and geometry (the best teacher of arithmetic I ever knew was a graduate engineer) so a teacher of lathe work should know the planer and the milling machine and all the other standard tools of the machine shop. The same principle holds in carpentry, or printing or plumbing.

The manual training teacher has the advantage because his preparation has been relatively broad. He has the best foundation to build on. Give him more specialized skill and the requisite experience, which, by the way, he will get much more rapidly than the average mechanic, and he becomes the best teacher of part-time students.

In this connection it should be added, however, that if the part-time work takes any more of the manual training teachers there must be a larger number entering the training schools for manual training teachers. The supply is not equal to the demand now.

#### A SOUTHEASTERN REPRESENTATIVE

OUR readers will be interested to learn that to represent the Southeastern section of the country we have secured the services of Forest T. Selby of Durham, North Carolina, as our news-gatherer. After trade experience in wood-work and electrical work Mr. Selby

entered Miami University where he earned a normal diploma and a B. S. degree. Before he left the University he had eight years of experience in teaching to his credit and had gained the position of assistant professor of industrial education. He then went to Teachers College, Columbia University, where he received



FOREST T. SELBY

his master's degree in 1919. The next year he was supervisor of teacher training for trade teachers at the A and E College, Raleigh, N. C. Recently he has accepted the position of supervisor of industrial and vocational education at Durham, N. C., where a large school building program is being entered upon, and where it is intended that the schools shall function to the fullest extent possible in their service to the community.

Mr. Selby will be glad to keep in close touch with all readers of this Magazine working in his section of the country.

*Vocational selection should not be made on the basis of the vocation that will yield the most money, but the one that will permit the greatest service, both in relation to the powers of the individual and the needs of the community. The growing demand for, and acquisition of, leisure makes it increasingly necessary that the right use of leisure should be included.*

—CLARENCE D. KINGSLEY.

## A POINT OF VIEW

“**W**HERE is the Hitch”<sup>1</sup> has aroused discussion. To one it is a satire; to another it is a piece of nonsense. But worse (or better) than any other comment comes the word, “Where is the Point?” In other words the hitch is either in my own head or that of the other fellow. Some have said that the school superintendent was “an old fogey.” Others stated that the school principal “killed the proposition.” One was unkind enough to suggest that the new woman member “was voted down as she ought to have been.” And finally a reader felt that the Smith-Hughes agent had “more college degrees than sense.”

As a matter of fact the “play” was written in all seriousness to describe a situation, all too common in this country, which awaits solution. The characters represent not merely types of men but types of thought. The school superintendent is not necessarily an old fogey and if he was it would not make a whole lot of difference. He is simply the product of a situation. He plays safe because the community would not retain him if he knocked the ball over the fence. The town expects nothing particularly startling or progressive from its pulpit or press. It seeks normalcy in everything, whether it be religion, or business, or education. And normalcy in that town means dead level. The school superintendent merely represents the people. He reflects them. He plays safe by his “conservative liberalism” and his “liberal conservatism.” It is true that he needs brains and special training in school administration. After he learns what is the meaning of education he will need either an endowment or a tenure of office so that he can speak his mind freely and work his brain effectively. Being elected

every year he spend three hundred sixty-four days in getting elected and one day for receiving congratulations.

Turn to the high school principal. He has spent years in the class rooms of his school and of his professional days. His business is to think of courses of study in terms of credits, points, and diplomas. He was trained that way, and so he moves in that direction. He must see shop mathematics in relation to the regular mathematics, and in terms of educational evaluations, i. e. credits or points (if he does not the pupils and parents will). His talk about democracy is harmless. It is only his spinal cord talking. It does not mean any more than the oath of a gutter snipe, or the supplications of a drug addict. It is a force of habit. He thinks that educational democracy begins and ends with all children studying under one roof and associating together in algebra, English literature, and Euclid. He may not know that it is not a question of roofs or slightly differentiated courses of study, but rather that it is a recognition of types of mind, of vocational aims, of school opportunities, of “earning while learning,” and of cafeteria service. While he is not a particularly lovely fellow, I do not blame him. He is not the “hitch.”

Take the Smith-Hughes doctor of philosophy. He was, you recall, the state agent. He was in town only for the day. It was one of the two hundred villages in the state similar in character that he might have visited. He was shown the town relics because every state agent has to be “entertained,” and relics are tableted and easily shown. Besides they serve to keep the state agent from meeting business men where he might parcel out ideas contrary to the policy of the superintendent of schools.

<sup>1</sup>A short play published in this department in January



He saw the manual training and the high school. There was no time left to see the industries. He did not meet the industrial men of the place and if he had they would have thought of him as a "school man" and would have called him "professor." They do not know that some school men have ideas useful in the practical world of affairs. He is prejudiced against manual training or, at least, he fails to see how it might serve useful ends. He came to the meeting well prepared in the definitions, rules, and regulations. You know them as well as he did, and you recognize his "line of goods." He is selling according to the trade catalog and the gross and net prices were quoted accurately. No! he is not the "hitch." He might have been better but he could have been worse.

Julia Sharp, the "live wire" as she was called by those who elected her, represented an active minority who wanted a change in the schools. An active minority is more effective always than an asphyxiated majority. But it was one thing to talk herself into office and another matter to get anything started. She believed that state aid should be given in night vocational schools even if the class was not made up of men employed at definite tasks relating to instruction. She thought that the excellent manual training in town was as good as the industrial training given in the next town, and ought consequently to have state appropriations. She wanted the schoolhouse open for adult recreation, such as bowling, pool, and billiards. She thought that adult women who had free time should join the high school cooking class. Her ideas were without end, but she did not get very far. Between the usual mental hand-outs of "no item in the budget for such work," "school program does not allow," "it is without precedent," "State Department will not sanction," etc.; and

the fact that she did not really know enough about the school business to get at the truth, Miss Sharp failed to "function." She is not the "hitch." Someday she will make good. At present the more experienced members of the board and the superintendent throw smoke screens around her ideas.

Well then where is it? You recall that the town was a small one—a matter of 5000 people, and that it had textile mills and two factories representing skilled trades. It was chosen because it is typical of thousands of villages in New England, New York, and Pennsylvania. Substitute farming for textiles and it fits many situations in the West. Vocational training for such places is highly important—as important, at least, as it is in the larger centers. Agricultural education has managed to find its place in the rural communities thru the home project for practical expression and thru extension work for adult teaching. Its introduction has not greatly disturbed the high school program. Industrial training in the cities is doing fairly well—depending upon the city. The small manufacturing village or the Middle Western county seat requires a special industrial training program. Dr. Pinkham did not have any such training program in package form, freight prepaid, and guaranteed to fit Spunkville. And what is far worse (or better), I do not know as he ever will have a plan which will fit all the places in the country. Quite apart from local traditions and human failings of superintendent and principals, have we a program of industrial training for small industrial communities which meets adequately the local situation regarding school plant, per capita costs, democracy, etc., and at the same time which conforms with definitions, laws, rules, and regulations, circular letters, form 56x, etc? I say "No!", most

emphatically. The curse of no state or national aid is that there is nothing to stimulate the community. The curse of aid is that some mighty poor work which conforms to a rule or law obtains financial recognition while some work which is well done does not obtain aid because it does not meet the standards—not of work, but of organization. I am not criticizing the Federal Board or the Smith-Hughes Law. I have been a state director and I know how a community will attempt to obtain vocational aid for anything—even for cardboard construction. On the other hand, I have seen communities, like Spunkville, which ought to have some phases of vocational training, drop the proposition like a hot potato when they heard or read the requirements. Industrial training as specified by law and current practice does not fit in with many local programs whether they be school, tax, or plant.

The hitch, in short, is that the small community, industrial in its character, must focus its vocational training, so far as the all-day school is concerned, upon varied vocational *activities* and let the question of state aid for vocational education *per se* go by the board. As many as possible of these activities should be taught in a prevocational sense in the middle years between twelve and fifteen. The boys are to sample and explore. They are to be exposed to industrial activities. Recognition should be given to work done at home or out of school. Acting as an agent for a weekly paper, store or office work, vocation employment, amateur wireless and electricity, are activities which have vocational guidance and training values. Dr. Pinkham recognized the good work which the manual training teacher was doing but he had to “knock it” because it was

not vocational. As a matter of fact, I could prove if space permitted that a junior high school type of industrial arts is not alone the only work which the all day school in a small town can do, but that it is also the best preparation for vocational life in that community. To be sure it can hardly be state aided in a vocational education sense as things now stand.

Real trade training in such a town is only possible under a part time system; some of it given in the day time, the rest in the evening. The limitation that evening students must be engaged in practical work during the day corresponding to their night instruction needs readjustment. Such a rule applies to some trades like plumbing, pattern-making, and steam engineering. It does not apply to all trades. As regards this particular matter, some day a little democracy (equal opportunity) will get into the Smith-Hughes Law.

Dr. Pinkham ought to spend three days each, in ten industrial towns of his state studying the proposition of how two teachers could handle the prevocational and the part-time work. He should see how far industry can go in assuming training in its own plant and wherein the school can cooperate. He should develop the necessary equipment for teaching vocational activities of varied order, and should not ignore the possibilities of utilizing all the boy's experience in the community and the home. Dr. Pinkham has been trained to know the Smith-Hughes regulations. He has been taught to ignore the vocationalizing values of the industrial arts. He has studied laws, rules, and circular letters. He should focus, for a time, on boys, industries, and towns.

—ARTHUR DEAN.

## WASHINGTON CORRESPONDENCE

### ADVANTAGES OF MANUAL TRAINING SOMETIMES EMPHASIZED BY OMISSION

**I**N THE early days of manual training in this country we used to hear more than we do now about the general educational values of manual training, and the general objectives, such as training in habits of neatness, orderly procedure, and others. A more mature philosophy has questioned the belief in the transfer of skill acquired in one line of activity to some other line of activity. Indeed, those whose opinions carry great weight have been so positive on this point that many of their followers have doubted whether there be any virtue in manual training, so far as the acquisition of manual skills is concerned, outside of the narrow fields in which such skills are acquired. Is it not possible to "lean over backward" in this matter?

It is not necessary to believe that skill in the use of the marking-gage will function directly in the use of a pair of pliers, or that it is useless unless it does function now or at some future time in some non-related field of activity, in order to be convinced of its educational value. The establishment of a great variety of muscular coordinations is absolutely essential to the normal development of a child, and this end is accomplished far more effectively by means of directed play and purposeful manual activities than it can possibly be by mere calisthenic exercises no matter how skilfully devised.

Thru the use of the tinnern's snips, the paring chisel, the weaving needle, the clay modeling tool, and the like, the child gradually acquires very definite conceptions regarding the varying degrees to which physical materials and substances will yield to his manipulation, a considerable range of skills in producing

purposeful changes in these materials, and, perhaps most important of all, very definite ideals with reference to the degree of success with which the means and processes employed accomplish the ends in view. A most important function of the teacher is to show that these conceptions and these ideals reach out and affect the individual's whole life.

In order to appreciate fully the value of anything it is sometimes necessary to be deprived of it. It is astonishing how much we really depend on our hands, and how important it is that they be capable of doing well those things that we are continually expecting of them. A cut or bruised finger, or a sprained wrist, which temporarily puts a hand out of commission is a sharp reminder of something missed.

This line of thought was suggested by a recent visit to a community where I had occasion to observe several groups of elementary school children who had been quite without the advantages of organized manual training. I was impressed by the lack of something that I think we too often regard as commonplace, since it is a normal possession of the children with whom we are familiar. There was a singular lack of manual dexterity or control, not to say awkwardness or clumsiness, which manifested itself in the discharge of such simple school tasks as folding a sheet of paper, sharpening a pencil, using a piece of crayon at the blackboard, adjusting a window shade.

The child who is deprived of the development that comes with a carefully organized and skilfully conducted scheme of manual training and directed play suffers a handicap that we too seldom appreciate until circumstances focus our attention upon it. I have compared notes and find that others have had



similar experiences in visiting schools in which this element has been neglected.

The growing child should have definite training of a kind which will give him increasing power to use his eyes to see clearly the physical features of a problem to be solved, to use his mind to analyze

the problem into its elements and to formulate a plan for its solution, and to use his hands to execute the appropriate manipulations and processes to accomplish the end in view.

—WILLIAM T. BAWDEN.

## IN FOREIGN COUNTRIES

### A NEW TRAINING COLLEGE FOR HANDICRAFT TEACHERS

IN OUR last issue we called attention to the efforts of the Board of Education in England in trying to raise the standard of preparation of teachers of manual training. Since writing that item we have received a copy of the November number of *Manual Training*, which publishes as its initial article an account of "the first residential training college for handicraft teachers." This college at Sarisbury Court, Hampshire, has been established by the Ministry of Labor in conjunction with the Board of Education to meet the demand for qualified teachers of handicraft in elementary schools.

Sarisbury Court is a large house built in ornate Elizabethan style on the banks of the river Hamble, and has a very extensive grounds. It was used during the war as an American hospital, so the grounds in the vicinity of the house are covered with army huts. These are now being used for the training of ex-service men, not only as teachers, but for various trades and occupations for which the Ministry of Labor is responsible. A block of these buildings has been set apart for the Training College for Handicraft Teachers.

The college opened with 140 students, seven teachers and a principal. The course covers two years. The studies include English, history and geography, 5 hours a week; mathematics, 4; science and drawing, 3; woodwork, 4½; metalwork, 3¾; principles of teaching, 1¾; private study, 4.

The writer of the article very appropriately calls attention to the fact that

too small a proportion of time is given to shopwork and drawing, unless students entering this course are required to have a prerequisite of shop experience. Later in the article the writer says

The establishment of the college is an event of paramount importance in that it is the first residential college for the training of handicraft teachers. When the period of training of the ex-service men comes to an end there is little likelihood of the college being closed, for it is the intention of the Ministry to encourage the establishment of similar colleges in the immediate future. These colleges may result in new methods being adopted in the teaching of handicraft.

### THE PSYCHOLOGICAL FACTOR IN INDUSTRY

THE physiological factors involved in purely muscular fatigue are now fast becoming negligible compared with the effects of mental and nervous fatigue, monotony, want of interest, suspicion, hostility. The psychological factor must therefore be the main consideration of industry and commerce in the future."

The above quotation has been taken by the London *Times* from *Mind and Work*, a book written by Dr. Charles Myers, director of the psychological laboratory of the University of Cambridge. Dr. Myers is a member of the Industrial Fatigue Research Board of England. He has gained his knowledge of labor thru visits to factories and offices and conferences with leading employers and representatives of trade unions. In commenting on this quotation the *Times* writer says:

"We have spread education over the whole people and must now face the tremendous problem of harnessing the new force which we have created—the mind of industry. At present the mind of industry is not harnessed; it is rather revolted by sheer monotony, much of it avoidable, and alienated by lack of interest in work. Thus the new force which we have not learned to use becomes an enemy, a dangerous enemy."

#### TRADE UNION FUNDS TO PROMOTE EDUCATION

THE *Manchester Guardian* recommends that the trade unions come to the relief of the Worker's Educational Association. It points out that "post-war boom in tutorial and one-year classes has materialized, but the popularity of learning is an embarrassing as well as a grateful occurrence to the promoters of the cause." There is great need of more funds to carry forward the work.

The individuals who used to subscribe to the Association are just the kind of people who have been hardest hit by the war. The way of financial escape obviously lies along the road of trade unionism. The huge majority of those who benefit by the classes are trade unionists, and, altho they may not be able to pay individually for the benefits they voluntarily seek and receive, the big unions can and should accept a corporate responsibility. A beginning on these lines has been made by an arrangement with the Iron and Steel Trades Confederation, which finances the educational facilities of all kinds provided by the W. E. A. for its members. It is most unlikely that the Board of Education will be able at such time as this to do anything more than maintain its usual scale of grants, and it is the obvious duty as well as the obvious advantage of the other big industrial organizations to play their part. The well-established unions of skilled laborers, whose members are often the keenest students, have in nearly all cases ample funds to devote to work of this kind. Trade unionists should be ashamed to rely for their tuition on the unpaid overtime work of men already busy, or on the wretchedly remunerated labors of professional tutors who are often far worse off than their pupils and yet must buy expensive books to keep up with their work.

AFTER a long term of valuable service in war work, including supervision of the industrial activities of

interned Austrians and Germans on the Isle of Man and service in Germany in reconciliation work at the request of some of these same Germans, James T. Baily has again become a handicraft teacher. He is now very busy opening a new handicraft department in the Central School at Cheltenham.

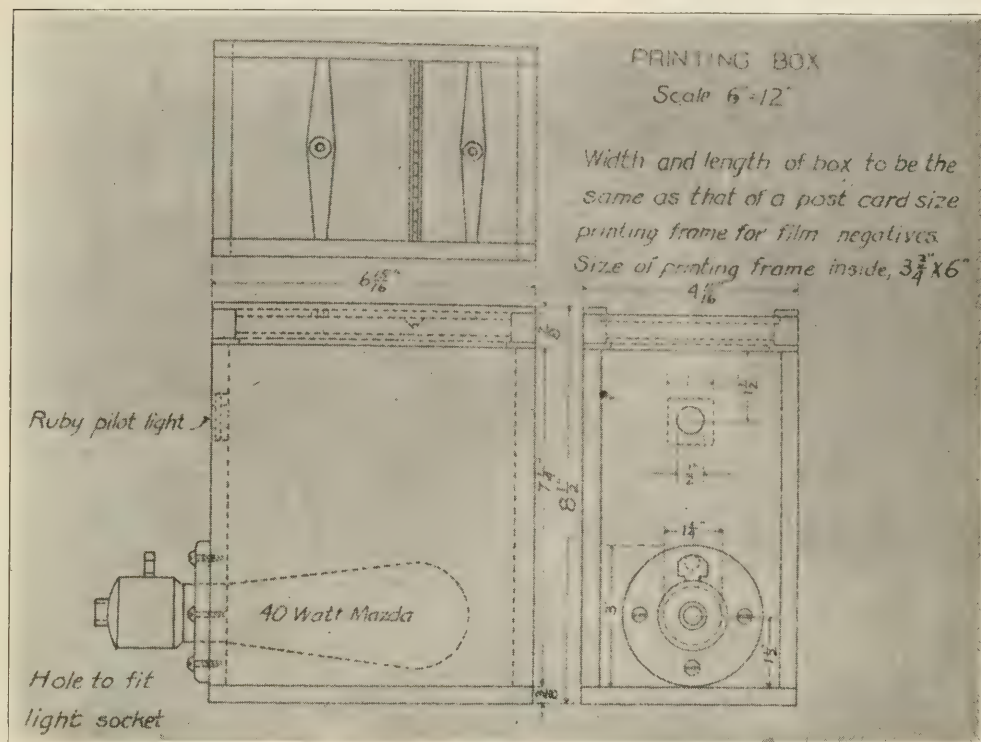
#### J. H. JUDD RETIRES

A RECENT letter from J. H. Judd, Manchester, contained a statement which was very much of a surprise. He has been retired from full-time service on account of age. Mr. Judd is one of those fortunate men who has cultivated the art or the health or the youthful spirit or all three which have enabled him to obscure the fact that he is sixty-five years old. In spite of his age, *Manual Training* speaks of him as "one of our youngest men." In Mr. Judd's letter he points out that "age does not always cripple enthusiasm." He seems to be looking forward to an opportunity to do some things for the profession that he has not had time to do in his busy years as supervisor of handicraft in the city of Manchester.

In part-time service he will be the lecturer and demonstrator in school handicraft at the Manchester Training College for Teachers. This is really a continuation of a service he has rendered for the past ten years, and will enable his influence to continue in the Manchester schools. To this he will add "Froebel work for infant teachers, and handyman classes for adults." This, with the committee work he is doing dealing with national problems of his profession, make it clear that retirement in Mr. Judd's case is not doing smaller but larger things for the cause in which he has invested his life energies.







seasoned wood and is an ideal project for a boy who owns a camera. It may be made to suit the size of any printing frame, providing the depth of the box is accurately figured out so as to place the light a distance equal to the diagonal of the frame (inside measurements) from the glass which supports the film. The frame may be secured from any photo supply house and used on the print box making it fast with a screw on either side.

A good problem in wiring lamp socket and attachment plug may be worked out if the boy does not already own an extension cord, which may be used. The box may be finished in brown stain or natural color with a coat of white enamel on the inside.

—F. M. GROSHONG,

—F. M. GROSHONG,  
Supervisor of Manual Training,  
Portland, Oregon.

## INVALID'S TRAY AND TUB STAND

Dear Sir:

I noticed in one of the MANUAL TRAINING MAGAZINES that you were anxious to get drawings of suitable models. I am sending two drawings under separate cover, that you may possibly be able to use.

One is of an invalid's tray. This is a very useful thing to have in the home if anybody is sick and

has to have meals in bed. The legs are held in place by the spring cleat which fits into the small opening in the leg rail. When not in use the legs can be folded back and held in place by the spring cleat. This model is suitable for first form High School and also for the more advanced pupils in the eighth grade.

The other drawing is of a movable tub stand, another very useful thing, especially on wash day. This also can be made with the legs to fold underneath so that it can be hung up out of the way when not in use. Small wheels or extra large casters are fastened to the legs so the stand can be moved about.

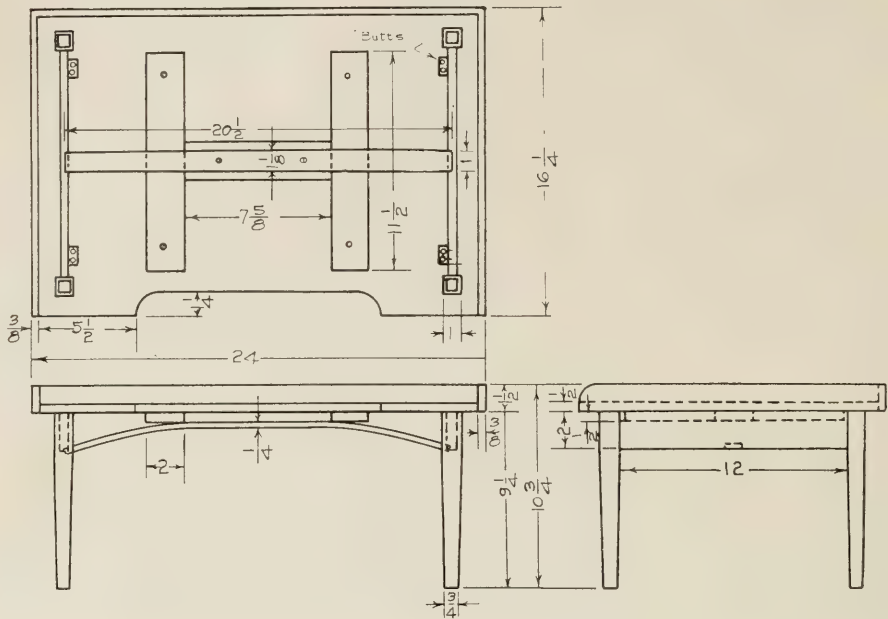
This model is not too difficult for eighth grade boys. It was a very popular model with the boys, some of them coming to work on it after hours.

FRED A. CAMPBELL,  
Manual Training Instructor,  
Owen Sound, Canada.

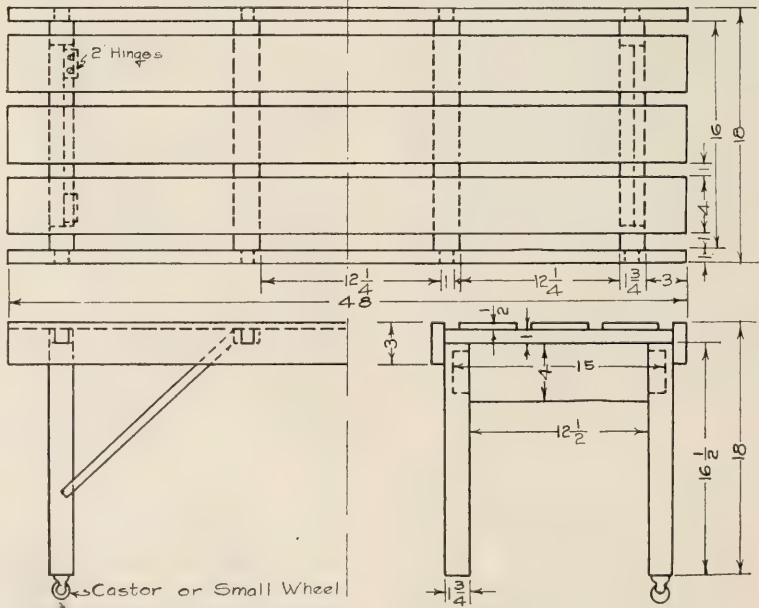
## BIPLANE

IN many schools there has been a demand for a drawing of a small airplane that can be made by the younger boys—one that will go. The drawing herewith shows a biplane made in the schools of Buffalo, N. Y., under Stewart F. Ball, director of

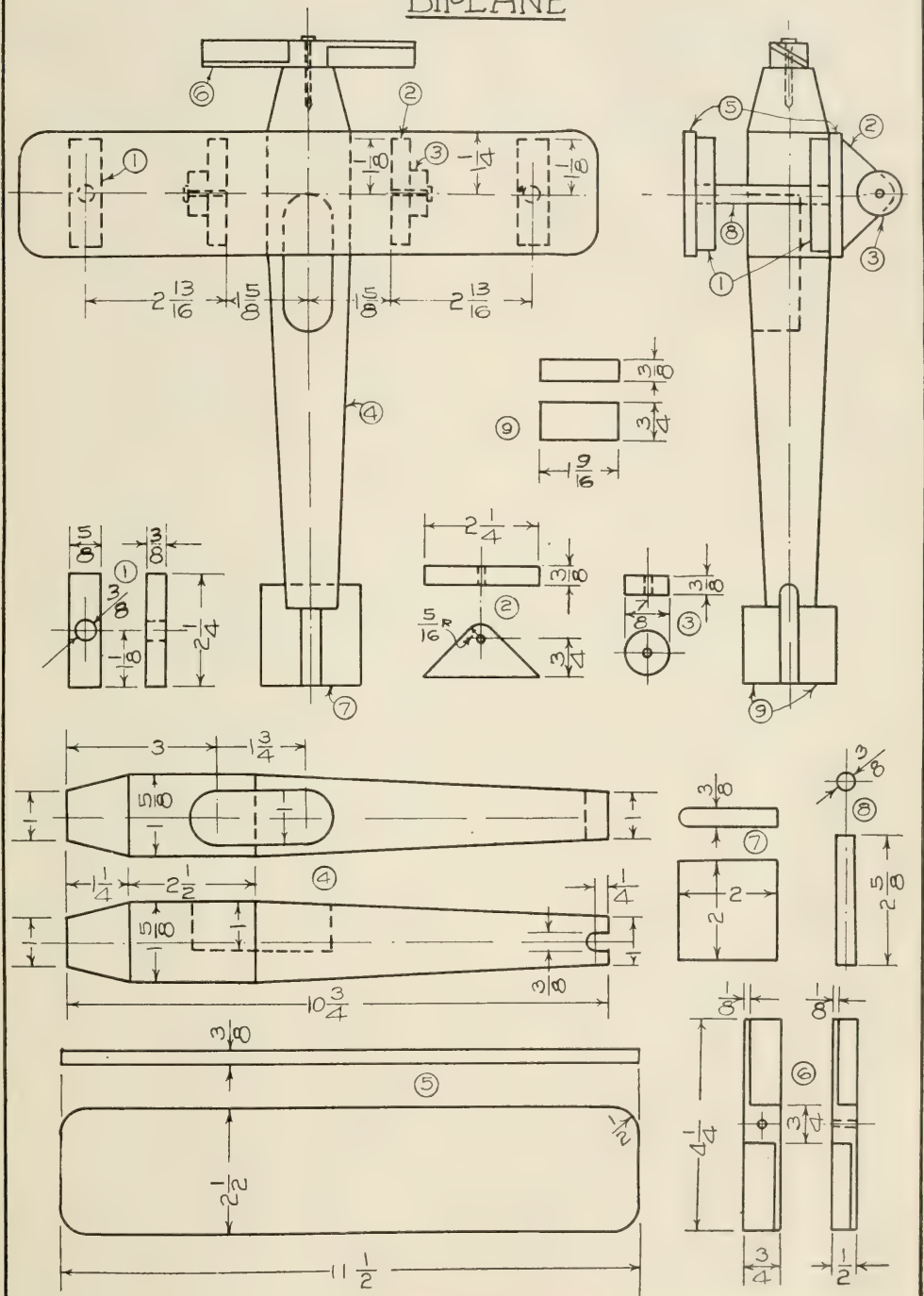
INVALIDS TRAY



TUB STAND



## BIPLANE





manual training. If fastened with a simple harness, it may be swung around one's head and made to fly in the same way as the monoplane shown in the November number.

### FORGING PROBLEMS

**T**HE accompanying plate of forging problems is the first of several that have been contributed by Griffith E. Owen of the Union High School, Grand Rapids, Michigan. Mr. Owen is an expert blacksmith as well as a trained and successful teacher. The problems which he has contributed are not arranged in a course, but are such as he has found to be satisfactory in his teaching. We give one plate this month; others will follow from time to time.

—THE EDITORS.

### HOOK

**T**HE usual high school forge course includes the making of chain links or chain and hook. The hook for the chain can be made in at least three different ways.

1. From round stock of the same diameter as the required hook.

2. From flat bar stock.

3. The square hook is made from square stock.

The square hook is commonly used on farm implements and farm machinery and for this reason could be used in the forge course of a township or rural high school.

#### STEPS IN MAKING SQUARE HOOK

1. Figure length of stock as per drawing.

2. Cut to length.

3. Upset one end of stock large enough for eye.

4. Round and form eye.

5. Punch hole.

6. Make tapered point.

7. Bend the hook to shape.

8. True hook for center pull.

### EYE-BOLT AND RING

**F**OLLOWING the making of the chain and hook the eye-bolt and ring might be included in the forge course. The eye-bolt is made first, the ring being welded into the eye-bolt.

#### STEPS IN MAKING EYE-BOLT

1. Cut stock.

2. Turn to shape of link before scarfing.

3. Close down and bend over drift-pin.

4. Weld and draw down to size.

5. Cut off extra stock.

6. Weld in ring similar to instructions given for welding ring on chain.

### CLEVIS

**T**HE method of making a clevis suitable for a high school course is the turned eye method, the stock being stub pointed on the end, turned and welded back of the eye about one inch in length, varying according to the size of stock used.

#### STEPS IN MAKING CLEVIS

1. Cut stock.

2. Make stub points on each end.

3. Turn over drift-pin.

4. Weld.

5. Make both ends in line.

6. Turn to shape.

—GRIFFITH E. OWEN.

### METHOD OF STAINING CHECKER BOARD

*Question:* I have at hand about a hundred checker-boards for the Red Cross. These boards are made of fir and are ready for staining. As yet I have not been able to obtain a stain which will not run. You understand, of course, that alternating squares are stained dark, leaving the others light. What sort of a stain may I use which will not run and how would you advise me to apply it?—H. J. S.

*Answer:* All stains will run more or less; water, spirit, and acid stains more than oil stains. This feature is due to their penetrating quality, and this is one of their valuable qualities. A stain which does not run does not penetrate, and hence lies on top like a paint.

There are several methods of procedure in working out your checker board. I would advise the following:

1. Score all lines across the grain with a sharp thick-bladed knife. This will part the grain and tend to close the ends thus preventing running in that direction.

2. Gage all lines parallel with grain with a sharp spurred panel gage. This must be done carefully for the fir grain fractures easily and must not be forced.

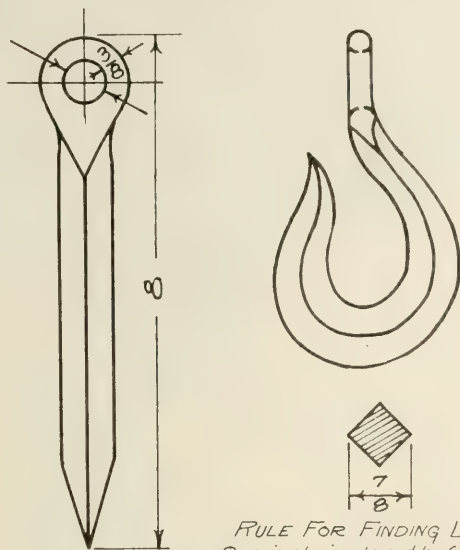
3. Stain every other square with Standard Varnish Works' Clear Tone Oil Flemish stain, using a small soft-haired brush. Begin with the checker in the nearest left hand corner as you are in a checker player's position at the table.

4. Shellac and varnish or finish with whatever surface finish you wish to apply.

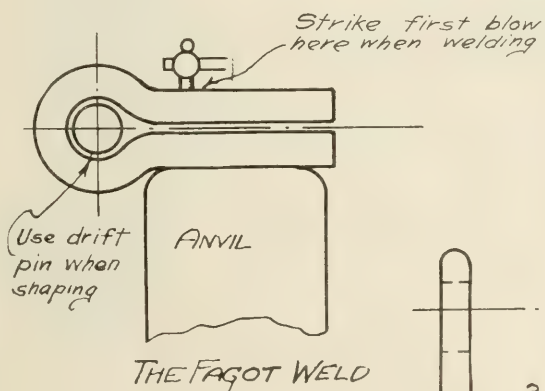
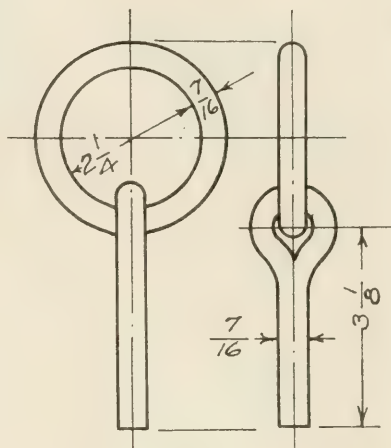
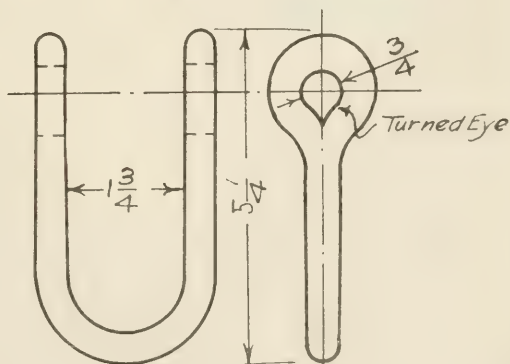
Black shellac is sometimes used in place of stain but it is hard to put the shellac on smoothly.

Try to put the stain up to the lines but not into them.

—E. A. JOHNSON, Bradley Institute.

HOOK

RULE FOR FINDING LENGTH—  
One inch in length from  
the center of hole for  
every eighth in diameter of  
cross center distance

EYE-BOLT  
AND RINGCLEVIS

## CURRENT PUBLICATIONS

*Carpentry for Beginners* by William Fairham. J. B. Lippincott Company, Philadelphia. Sixe, 5x7¼ in.; 217 pages; price, \$1.50.

This book is not a technical book on carpentry as such, but a book on elementary benchwork in wood. Judging from the old style of planes used in the illustrations and from the character of the drawings, the author is an Englishman, in England. The first part of the book consists of problems presented with perspective sketches, working drawings and explanatory text. Most of these are very good problems, but, from the American standpoint, the working drawings are not satisfactory in technic. The last part of the book is a text on the common woodworking tools and their use. It includes some information concerning lumber and other supplies.

On the whole the book is chiefly valuable to teachers in suggesting simple, practical problems and some points in technic which may be compared with the common American practice. It is not a satisfactory textbook for boys in American schools.

*Practical Trade Mathematics* by James A. Moyer, formerly in charge of the division of engineering calculations in the General Electric Company, and Charles H. Sampson, head of the technical and mathematical departments, Huntington School, Boston, Mass. Published by John Wiley and Sons. 1920. Size, 4¾x7 in.; 172 pages; price, \$1.50.

This book is another manifestation of the effort among teachers of mathematics to meet the present demand for specialized textbooks for the use of vocational students in evening and trade schools. This particular volume is written for students in the machine and building trades—electricians, machinists, carpenters, plumbers, sheet-metal workers.

The book is written in very simple language, many technical terms of the mathematician being eliminated.

*The American Red Cross in the Great War.* By Henry P. Davison. The Macmillan Company, New York, 1920. Size, 7½ by 5 in.; 302 pages; price, \$2.00.

This book is a summary of the activities of the 30,000,000 of people who were enrolled in this great humanitarian organization during the Great War. The *New York Tribune* says:

"The far-reaching and multifarious activities of the American Red Cross in the Great War are described with a wealth of accurate detail in this book by the chairman of the organization's war council. The ramifications of the work of mercy were innumerable; they included everything from handing out hot coffee to American soldiers on their way to cantonments and ports of embarkation to administering relief in the typhus areas of Russia. And whatever the job to be done, the Red Cross

accomplished it efficiently, courageously, humanely."

*Modern Magic.* A personal and household budget and account book. By Caro D. Coombs. Whitcomb & Barrows, Boston, Mass., 1920. 5½x8½ inches; 60 pages; bound in paper cover; price 50 cents.

This simple budget and account book dispenses with confusing lines and elaborate itemization. It is thoroughly practical, and in harmony with the best teaching of thrift in household management.

*Architectural and Other Alphabets.* This is the third of the series of "Exercises in Lettering" by George G. Greene, of Lane Technical School, Chicago. It is published by the Bruce Publishing Co., Milwaukee. Price 15 cents. It is small enough to be carried in the vest pocket. The other two booklets of the same series are *Slant Gothic Lettering* and *Vertical Gothic Lettering*.

### RECEIVED

*An Analysis of Department Store Occupations for Juniors.* Part-time Educational Series No. 3. Bulletin No. 2. Issued by the Division of Vocational Education, University of California, Berkeley, California.

Professor Robert J. Leonard, director of the division publishing this bulletin, says of it, "This is a study of five department store junior positions made to assist teachers in part-time schools. It will be suggestive to teachers not only as a source of information concerning these occupations, but also as a guide which they may use in making similar studies in fields in which young workers who come under the part-time act are engaged."

*Putting Farming on a Modern Business Basis.* By Bernard M. Baruch. Copy of a letter to the secretary of the Kansas State Board of Agriculture, Topeka, Kansas.

*Joy and Health thru Play.* By George E. Schlafer, Indiana University. Published by the United States Bureau of Education, Washington, D. C.

*Annual Report of the School Committee, Meriden, Conn.* Contains several pages devoted to vocational education.

*The Boys of Monteith.* A small, attractive magazine published by the printing class at the Monteith School, Wilson Ave., Newark, N. J.

*Utilization of Sycamore.* By W. D. Brush. Bulletin No. 884. Issued by U. S. Department of Agriculture. This contains photographic illustrations of some of the commercial uses of sycamore and a great deal of data on the subject.



# You Can't Overfeed!

The "Yankee" Bench Drill, with its Automatic Friction and Ratchet Feeds, avoids bit breakage and puts speed into the drilling job.

Just set your work and turn the crank. Friction Feed runs drill down to contact; then Ratchet Feed automatically goes into action and sends drill through the cut. Pressure mechanically regulated—bits are safe—you can't over-feed.

## "YANKEE" BENCH DRILL

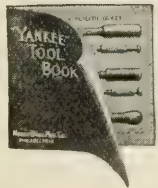
"YANKEE" Bench Drill No. 1005. Two speeds. 3-jaw chuck, holds drills up to  $\frac{1}{2}$  inch. Height 28 inches.

"YANKEE" Bench Drill No. 1003. One speed. 3-jaw chuck, holds drills up to  $\frac{3}{4}$  inch. Height, 18 $\frac{3}{4}$  inches.

"YANKEE" Vice No. 990. Accurately machined sides, ends and bottom, for holding work on bench drills. Swivel jaw for taper work; groove for rounds. Base, 6 inches long, 2 $\frac{3}{4}$  inches wide.

Gear Shifter

Fast, slow or  
locked, at a  
finger-  
touch



**YOUR DEALER CAN  
SUPPLY YOU**



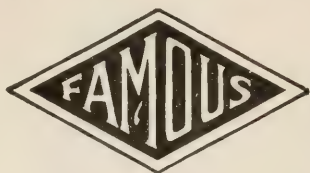
"YANKEE" Vice No. 990

The "YANKEE" Tool Book should be in the hands of every manual training school student. Full of information on better and easier ways of working in wood and metal. Write today for your copy. It's free.

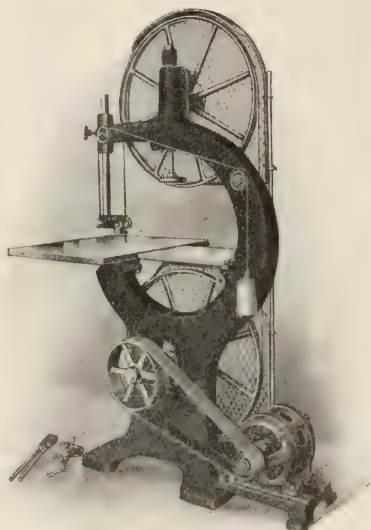
NORTH BROS. MFG. CO., Philadelphia

**"YANKEE"**  
**TOOLS**  
*Make Better Mechanics*

# EQUIP WITH



## Woodworking Machinery



**FAMOUS**  
36 Inch Wheel Band Saw

**A STANDARD** machine for commercial shop and one of our many machines especially suited to manual training needs. Motor driven, well guarded, accurate, and durable.

Fourteen thousand of these splendid band saws now in use.

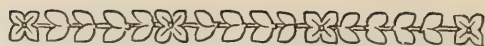
---

**Put your problems up to  
Our Engineering Division**

---

*Ask for Catalog No. 20*

**THE SIDNEY TOOL CO.**  
Sidney, Ohio



### FIELD NOTES—(Continued)

for the school. Classes will start early in the new year.

THE REGIONAL CONFERENCE of the state directors and supervisors for the Southeastern region met at Montgomery, Ala., Jan. 3-5.

THOMAS QUIGLEY, formerly state supervisor of trades and industries in Florida, has been appointed regional agent to succeed Roy Dimmitt, who is now with the State Board in Maryland.

—FOREST T. SELBY.

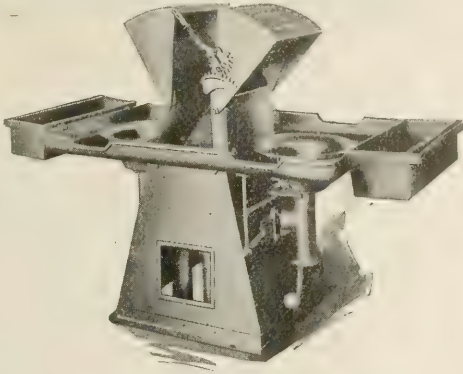
THE BUREAU OF PERSONNEL ADMINISTRATION, 17 West 47th St., New York City, of which Dr. Henry C. Metcalf is director, has announced an eight-weeks' course in personnel administration beginning Jan. 31, 1921. The course will include employment administration, industrial organization and management, technique of administration and executive control, labor statistics, industrial physiology, hygiene and sanitation, and labor psychology.

THE INDUSTRIAL SCHOOL building at Columbus, Indiana, built on the factory plan, has been "completed and fairly well equipped" according to information received from A. E. Logan, director of manual arts. He says, "We are at present offering courses in elementary and advanced cabinet making, elementary carpentry, wood-turning, mill work, machine shop, shop mathematics, architectural drawing, and machine drawing and design, also concrete construction.

"Much of our work is done by the unit method, both in grades and high school. We find it very efficient.

"Courses in continuation and night classes have also been organized and are progressing nicely."

AT A MEETING of the New England Vocational Guidance Association held in Boston on November 9th, Jacob Sleeper Hall of Boston University expressed the opinion that psychological tests for the vocational guidance of high school students will come more and more in vogue thruout the United States. At this same meeting Prof. John M. Brewer gave an address on the training of vocational counsellors, and described the work of the Bureau of Vocational Guidance at Harvard University. Miss Susan Ginn, director of vocational guidance in the Boston public schools, spoke on the status of the vocational guidance work thruout Boston. Chariton T. Miller, principal of the Hyde School, Newton, spoke on the way vocations are studied in grade schools by three methods: discussion, debates and dramatics. Mrs. F. L. Blake-more, a teacher at the Hyde School, told of her



**"Buffalo"**

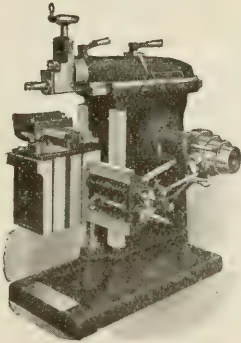
The Buffalo Forge Company are the inventors and original manufacturers of the Down Draft Forge.

This forge is designed to remove gas and smoke from the room thereby keeping the air in the class room pure and fresh.

Our catalog 205-31 contains complete data on the Buffalo line of manual training forges and equipment, and contains notes on forge shop practice with exercises. *Write for your copy.*

**Buffalo Forge Company**

**BUFFALO, N. Y.**



## Time and Money is Wasted

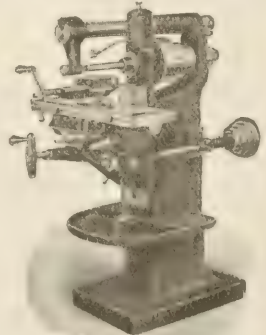
very often by the purchase of tools not adapted to the work. You would not think of putting a 32 in. lathe in your school room on account of the high first cost, and it is not adapted to your work. You can put two 16 in. lathes or more in the same space and you can buy two or three machines for the cost of the larger one. Apply that same principle to your milling machines and buy STEPTOE small power feed or hand millers, a machine especially adapted to school room work.

## A STEPTOE SHAPER

should be your first consideration in equipping your machine shop. Large pieces can be planed on a planer, but small parts should be put on a shaper. The simplicity of design of STEPTOE SHAPERS means ease of operation and a consequent saving in repair bills.

**JOHN STEPTOE CO.**

**Cincinnati, O.**





# SHOP APRONS

*Guaranteed*

Adjustable  
Neck  
Strap

Saves  
Many  
Times  
Their Cost



**The Apron You Can Buy  
with Confidence**

Standard  
Equipment  
In the  
Best Schools  
Everywhere

Instructors Apron free with first order  
for one dozen.

Price, White 75c

Price, Brown 80c

Delivery Same Day

Send no money—Just your order to

**CANVAS PRODUCTS  
CORPORATION**

19-21-23-E. McWilliams St.

School Dept.

FOND DU LAC, WISCONSIN



## FIELD NOTES—(Continued)

teaching methods in connection with vocational guidance, and twelve of her pupils, students of the eighth grade, presented a short playlet, entitled "Fits and Mis-Fits."

A HOME STUDY course in textiles is offered by the Extension Department of Columbia University to meet the needs of buyers, salesmen, etc. of the wholesale and retail dry good stores, who find they lack a knowledge of the selling points of textiles. The manufacture of textiles, the raw materials, yarn manufacture, weaving, dyeing and finishing of fabrics, a change in any or all of which makes a difference in the fabric are being studied.

This knowledge, which is imperative in selling textiles, cannot be obtained alone by reading books, but can be by a systematic study of the fabrics themselves under the guidance of an efficient instructor.

This course provides such instruction in the form of lesson sheets, with samples of fabrics, etc. Questions may be asked the instructor. The course is planned to furnish students with sufficient knowledge to describe, identify and test all kinds of textiles and thereby have a grasp of the selling qualities of a fabric.

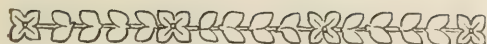
ONE of the conditions for admission to the teacher-training courses for continuation school teachers in the commercial division at the Buffalo State Normal School is, that applicants have had at least three years of satisfactory business experience in one of four groups of commercial positions: As clerk, bookkeeper, secretary or salesman.

ACCORDING to newspaper report the school board of Appleton, Wisconsin, has decided to take the night classes to the people so they will have no good excuse for not attending. Last year it was learned that many persons did not take advantage of the night school classes in the vocational school because of the long walk to and from the school building. To eliminate this difficulty evening classes are now provided in seven ward school buildings.

UNDER the direction of H. C. Wilcox the boys of the Morrill School, Concord, N. H., are sheathing a large room in the Garrison School of that city. This is the second room to be sheathed in this way in Concord.

AN EVENING VOCATIONAL CLASS in printing has been started in Concord, N. H.

THE PRINTING EQUIPMENT of the Ben Franklin Press of Springfield, Mass., has been purchased and shipped to Pittsfield, Mass., for use in the new continuation school. The work of this department will be under the direction of Thomas W. Sheridan,



## FIELD NOTES—(Continued)

formerly part owner of the Franklin Press of Pittsfield.

THE WAR developed a demand for many teachers of occupational therapy in military hospitals. The results of such instruction have led to a present demand for more therapeutic handwork in civilian hospitals and sanitariums. To help meet this demand the Tide Over League of Boston has opened a school of applied arts whose purpose is to train teachers for this type of work. The announcement recently received indicates that instruction will be given in weaving, woodwork, French leather work, basketry, Colonial rug work and design. The course for teachers includes, also, practical psychology and practice teaching in the League workshop and in the wards of the Massachusetts General Hospital. The director of the school is Miss Mary Irving Husted.

IN ADDITION to the day trade courses given in the Williamsport, Pa., public schools, night vocational courses have been started. These consist of elementary mechanical drafting, machine drafting and design, architectural drawing, furniture design and rod making, automobile construction and repair, cooking, elementary sewing, and advanced dressmaking. It is planned to give additional short courses on the steel square and in shop mathematics.

VOCATIONAL EDUCATION is gaining popularity in Kansas. A course in agriculture has been installed in forty-five schools, and has a total enrollment of 1,200. Rapid headway is being made in the organization of industrial courses, especially in the larger cities. The home economics course also is popular.

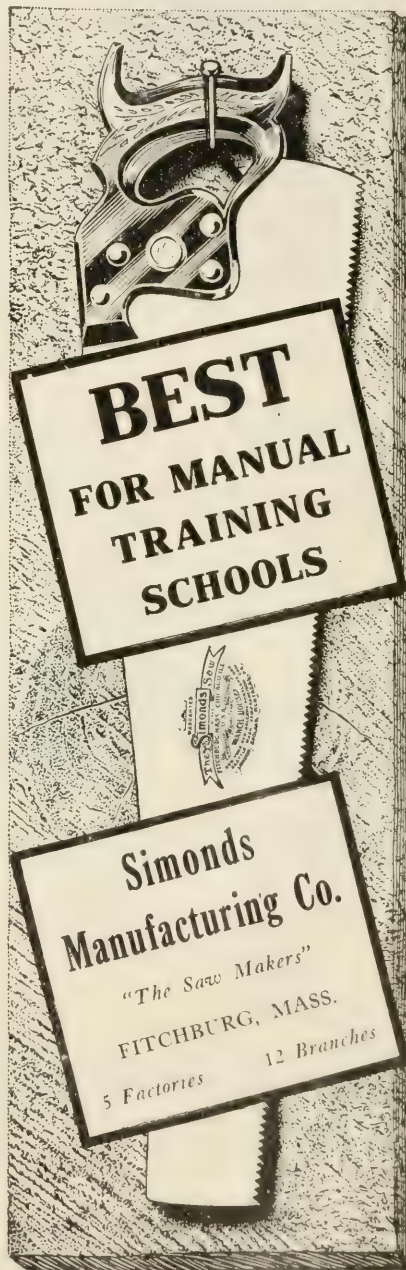
C. V. Williams, state director of vocational education, who also directs the training of teachers, predicts that the number of students in the courses will be doubled within the next year. Evening classes are attracting men and women who were denied the chance to secure education in their earlier years.

Employers are favorable to the trade and industrial courses and are cooperating in getting their employees interested.

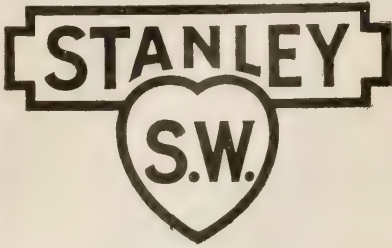
The next session of the legislature will be asked to appropriate money to match the federal appropriation allotted to Kansas, according to Mr. Williams. Governor Allen has promised to support the bill which will be introduced.

A COURSE in the care and construction of an automobile is to be offered this winter at the North Division High School, Milwaukee.

# SIMONDS SAWS



Our New Trade Mark



*Two Great National Industries Unite  
in Producing the Finest in*

## Wrought Steel Hardware and Carpenters' Tools

Become acquainted with these dependable products.

STANLEY Wrought Steel Butts, Hinges, Drawer Pulls, Bolts, Brackets, Screen and Garage Hardware, will be a constant source of satisfaction. Any architect is glad to specify them.

STANLEY Carpenters' Tools are first in the minds of good carpenters. The ownership of a STANLEY Hammer, Screw Driver, Plane, Rule, Level and Bit Brace will afford you many pleasing, profitable hours.

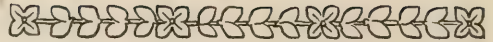
Catalogs of the above on request. Another STANLEY product is Storm Sash Hardware; ask your dealer to show it to you. Or if more convenient, write us for folders 15B.

### THE STANLEY WORKS

Main Offices and Plant:  
NEW BRITAIN, CONN.

Branch Offices:

New York	San Francisco	Chicago
Los Angeles	Seattle	Atlanta



### FIELD NOTES—(Continued)

THE MANUAL TRAINING department of the Yakima, Washington, public schools has made chairs and tables to equip one of the grade schools of that city and is now making several hundred trays, each of which will hold six half-pint milk bottles. These are for use in the distribution of milk to the children who have added this nutriment to their daily diet. Students in the manual training department will be asked to furnish tables for the cafeteria that will be installed in the new high school annex.

THERE IS ALWAYS some new voice ready to testify to the value of vocational education in the schools. This time the testimony is from a school trustee in Pima, Arizona. He is reported to have said that vocational work in the schools has done more than any other one thing to solve community problems. The beneficial effect is apparent in the after-school hours. The morale of the community is on a higher plane since the young people have had something to interest them.

#### PERSONAL ITEMS

E. A. WREIDT, state supervisor of industrial education in Illinois, has accepted the appointment as state supervisor of vocational education in Indiana. Mr. Wreidt's record of safe, progressive leadership in his field will, no doubt, be duplicated in Indiana, where he will have larger responsibilities.

J. W. CHESTER has been appointed supervisor of manual training for the city of Toronto, Canada.

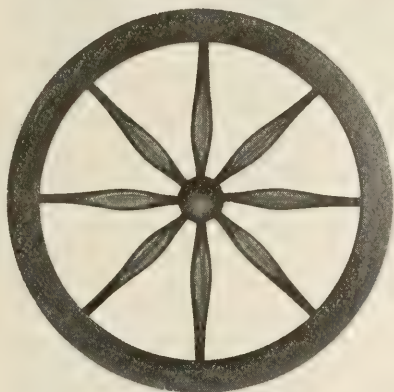
### TRADE NOTES

SCHOOLS USING STANLEY TOOLS will be interested to know of the recent merger of The Stanley Rule and Level Company and The Stanley Works, both of New Britain, Connecticut. Their advertisement in this issue shows the new trade mark under which the goods of the new firm will be sold. For seventy years their products have registered for quality and in the new organization the same high standard will be maintained. On January 1st three new offices on the Pacific Coast were opened: San Francisco, with S. V. Armstrong as district sales manager; Los Angeles, with L. M. Knouse as district sales manager; Seattle, with Bruce Findlay as district sales manager. These new offices with the above men as managers will be very glad to take care of the wants of the manual training trade on the Pacific coast for tools manufactured by The Stanley Works.

THE L. S. STARRETT Co. of Athol, Mass., have just published a new catalog. This catalog is not only an improvement in appearance and arrangement over their previous catalogs, but contains information about twenty-one new tools. These



# "HARD TO GET" MATERIALS



No. 400—Tea Wagon Wheel. Sixteen inch size, with rubber tire. Either oak or gum unfinished. Comes in sets of two wheels complete with axle.

**L**EATHERS and Imitations, Upholstery Supplies, Cushions, Nifty Pulls and Catches, Small Box Trimmings, Ash Trays, Umbrella Pans, Chair Cane, Cedar Chest Trimmings, (plain copper bands and fancy designs, locks, cover supports, hinges, handles, casters, etc.), Stains and Varnishes, Tray Handles and Mouldings, Picture Mouldings, Wood Shades for Electric Lamps, Art Glass, Costumer Hooks, Steel Rails for Wood Beds, Card Table Leg Braces, Desk Lid Supports, Dowels, Table Slides and Top Locks, Unexcelled Mirrors, etc., etc.

*New Catalog Mailed Promptly to Any Instructor.*

**Thurston Manual Training Supply Co.**  
ANOKA, MINNESOTA

## How

would you sharpen a spiral milling cutter?

Page 19 in our No. 7 Catalog describe how simply it is done on a



TRADE MARK

REG. U. S. PAT. OFFICE

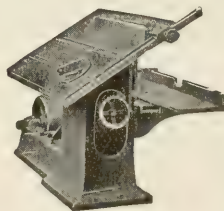
## Universal Grinder

In this book the machine is illustrated, set up for twenty-three different jobs of grinding.

It will sharpen properly all kinds of shapes of milling cutters also counterbores, reamers and other machine shop tools. In addition it will do accurate jobs of surface, internal and cylindrical grinding.

We will mail a copy of this catalog to any instructor for the asking.

**Greenfield Machine Co.**  
Greenfield, Mass., U. S. A.



## Crescent Wood Working Machines

are the tools your students will eventually use so give them the opportunity now of learning about this splendid line of wood working machinery.

Send today for our catalog of band saws, jointers, saw table, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinders, borers, hollow chisel mortisers, Universal wood workers.



**The Crescent Machine Co.**

46 CHERRY ST.

LEETONIA, OHIO

# Successful In a School of Over 6,000

## Cass Technical High School Series of Applied Mathematics Texts—Soon to be Published

AT this time, when there is a crying need for suitable and workable texts in applied or technical mathematics, the correlated mathematics series that has been developed at Cass Technical High School, Detroit, Mich., (a school with an enrollment of well over 6,000 day and night students), after years of intensive and experimentation, is especially welcome to teachers who have been vainly searching for the proper books to use.

We are, therefore, glad to announce now that arrangements have been made with the Mathematics Department of Cass Technical High School for the publication of the books developed by them.

### THE CASS MATHEMATICS SERIES Preparatory Mathematics By Ray & Doub

To be published in a few weeks. Will contain a review of common and decimal fractions and is intended as a preparatory course for students wishing to enter shop or laboratory courses. Ideal for continuation work and for a review by older men who have become rusty on mathematics.

### Mathematics for Shop and Drawing Students By Keal and Leonard

To be published soon. An ideal applied mathematics specializing in shop and drawing problems.

### Mathematics for Electrical Students By Keal and Leonard

To be published soon. Same as above but specializing in electrical problems.

### Technical Mathematics (In 3 volumes) By Keal and Leonard

Being prepared. Will embrace a full 4 years' day course in applied mathematics for technical high schools.

### USE THIS COUPON

John Wiley & Sons, Inc.,  
432 Fourth Avenue, New York City.

GENTLEMEN:—Please send me full information concerning the Cass Technical High School Series of Applied Mathematics Texts.

I am especially interested in the:

- ..... Four Years' Technical High School Series
- ..... Mathematics for Shop and Drawing Students
- ..... Mathematics for Electrical Students
- ..... Preparatory Mathematics

(Check which) and would like copies sent on examination when published.

Name.....

Address.....

If teacher, state school.....

If not teacher, give reference.....

M. T. M. 2-21



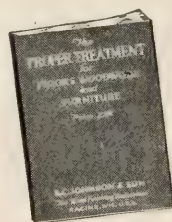
## TRADE NOTES—(Continued)

tools are in keeping with Starrett standards of quality and embody an increased range of usefulness, greater durability, new sizes and changes in graduations.

An improvement has been featured in their Universal Bevel Protractor, No. 359. The dial of this protractor is graduated to degrees around the entire circle. It is equipped with one vernier instead of two as on the Starrett Protractor No. 364. The new protractor is very easily read and convenient for a wide range of work. It has encased a positive method for fine adjustments. These adjustments, as well as the other adjustments, being controlled entirely from the center on the front side of the tool, justify its being called an Improved Universal Bevel Protractor. The lower nut locks the dial in its rotative path, and the middle nut, at a slight downward pressure, engages the fine adjusting device; while the upper nut locks the blade at any point in its length. The acute angle attachment renders it available for obtaining small angles.

A new No. 24A Micrometer Caliper Gage is shown in the catalog, which, tho especially adapted to the tire industry in measuring tire molds, is said to afford a greater scope of usefulness than any tool of its kind on the market.

This new catalog contains 352 pages of convenient size,  $5\frac{1}{4} \times 7\frac{1}{2}$ . It is well illustrated, printed on good paper and is altogether a valuable volume in the school shop, not only because of the full and complete description of the Starrett line of fine tools, but because of much additional information of help in the shop.



FOR ABOUT FIFTEEN YEARS S. C. Johnson & Son of Racine, Wisconsin, have been issuing a booklet on *The Proper Treatment of Floors, Woodwork and Furniture*. The eighth edition recently published is by far the most attractive issue ever put out. It gives the readers most

practical and concise instructions for finishing wood, either in stained or enamel effects, shows beautiful interiors, and gives covering capacities. One chapter is devoted to finishing manual training models.

Containing as it does practical information on finishing, every teacher of furniture construction and woodfinishing will find it helpful.

MANY TIMES A MANUFACTURER, producing a high grade of goods, renders a service beyond the furnishing of the best products which his plant can

# MAYDOLE HAMMERS



Adze Eye  
Nail Hammer



Machinists'  
Hammer



Blacksmiths'  
Hammer



Copperworkers'  
Hammer



Adze Eye  
B. F. Hammer

JUST A FEW OF OUR HAMMERS

All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request

THE DAVID MAYDOLE HAMMER CO.

NORWICH, N. Y.

IMMEDIATE  
DELIVERY ON



## Drawing Instrument Sets

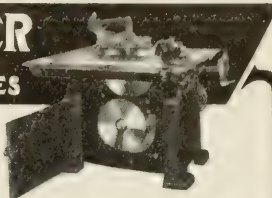
WRITE FOR CATALOG AND  
PRICE LIST TODAY.

DO NOT DELAY YOUR ORDERS—  
SUPPLY LIMITED.

**FREDERICK POST COMPANY**

Dependable Supplies for  
Engineers, Architects and Schools.  
**CHICAGO**

## MITER SAW BENCHES



The  
"Tannewitz"  
Universal  
Double Re-  
volving Ar-  
bor Saw Bench with Sliding Table and Taper  
Pin Gauges is the only logical tool for the wood  
shop where frequent setting up is the rule and  
accuracy is the goal. Send for bulletin.

**THE TANNEWITZ WORKS**  
GRAND RAPIDS, MICH.

## Build Your Own PHONOGRAPH

Instructive—arouses pupils'  
enthusiasm—provides one  
of the best problems in  
cabinet making.

Let Your Pupils Build  
Choraleon Phonographs

We furnish, plans, blue  
prints, motors, tone arms,  
case material—in fact,  
everything required. Full  
instructions. Choraleon's  
have fine tone. Play any  
record.. Ask for particulars



**CHORALEON PHONOGRAPH CO.**  
920 7th St., Elkhart Ind.



## Vaughan & Bushnell's Fine Tools

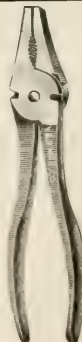
THESE two cuts of the Nut Pliers with wire cutter on  
the left and the Double Duty Pliers with wire cutter on  
the right shows only two of a long line of dependable tools  
especially adapted for vocational training work.

**VAUGHAN & BUSHNELL MFG. CO.**

For 50 Years Makers of Fine Tools

2114-2138 Carroll Ave.

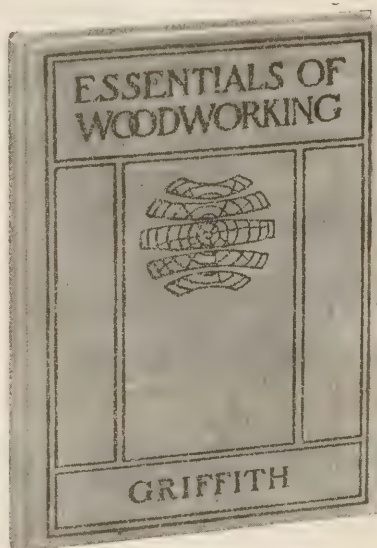
**CHICAGO**





# Essentials OF Woodworking

By IRA GRIFFITH  
Professor of Manual Arts University of Wisconsin  
THE STANDARD TEXTBOOK ON  
WOODWORKING



FOR HIGH SCHOOLS  
FOR UPPER GRADES  
TECHNICALLY CORRECT  
PEDAGOGICALLY SOUND  
PROPERLY ORGANIZED  
WELL BALANCED  
SIMPLE LANGUAGE  
CLEAR AND DEFINITE  
WELL ILLUSTRATED

Unlike most textbooks on woodworking, this book is not written about a course of projects but may be used with any course and in any order that the teacher desires. It contains the fundamental facts and principles which should be covered in every elementary course in woodworking. Its use as a text results in better organization, definite instruction, improved quality and increased quantity of work done.

ADOPTED FOR STUDENTS' USE IN  
LARGE AND SMALL SCHOOL SYSTEMS  
IN ALL PARTS OF THE UNITED STATES

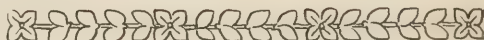
Price, postpaid, \$1.44.  
Discount in quantities.

THE MANUAL ARTS PRESS  
PEORIA - - - - - ILLINOIS

## TOOLS

For Manual Training Shops.  
Send your inquiries to and get the especially  
low prices quoted by

**MONTGOMERY & CO. Inc.,**  
105 Fulton Street New York City



### TRADE NOTES—(Continued)

produce. This time it is Henry Disston & Sons of Philadelphia. They have just published a book of 72 pages entitled *The File in History*. There are few tools more essential in the development of industry than the file. Because it is so universally used, so indispensable, and such a common tool, it has not received the attention which it deserves.

This book gives a description of the development of the file from the earliest times down to the present day; a brief statement of the modern method of file making; a description of the great variety and numerous uses to which files are adapted. It is abundantly and well illustrated with photographs, showing files in various forms used by the Egyptians, and Romans, down thru the ages to the large variety of files now produced to meet the wide demand of industry. It is surprising to one who has not made a special study of this subject to know the wide uses, and the many styles, shapes and cuts in which files are made.

Fortunately this firm has made it possible for manual training teachers to get a copy of this book without expense. It is a book which every teacher of shopwork should have in his shop library and which he will find worthy of reference use by himself and students.

THE FRANK R. PORTER & Co. of Washington, D. C. are making an offer of special interest to instructors of woodworking, particularly those having difficulty in securing suitable lumber. They offer to ship to any school a large chest well and substantially made, filled with Black Walnut lumber, value \$100.00; containing a choice assortment of turning, cabinet making and carving material for selection and approval, at nominal outlay and on consignment. The material is all cut to sizes, thus avoiding waste. You pay only for what you use, returning the balance at any time. They also offer to supply by parcel post special assortments cut to small dimensions. This new service is of interest to manual training teachers and should be welcomed especially where difficulty has been experienced in securing suitable lumber free from knots, checks and blemishes. See their announcement elsewhere in this issue.

## BOOK NOTES

SOMETIME ago we asked Professor Charles H. Bailey to tell us how he came to write his book, *Mechanical Drawing for Beginners*. His statement is so thoroly in harmony with the experience of many other teachers, and so frank and modest that we believe it will interest the readers of this column. The following is the first part of it:—

"My first experience in studying mechanical drawing was obtained more than twenty-five years ago while pursuing an engineering course in college. The course given to us at that time was extremely theoretical and formal, the whole of the first year being devoted to geometrical drawing and the theory of projections. As students we had little idea of the value or meaning of what we were doing, and learned its application only when we began to study designing and practical drafting.

"Two years after graduating from the engineering course I accepted a position to teach manual training in a high school and was expected to teach mechanical drawing also. Altho I had experience in practical drafting before taking this position, I naturally gave to the high school students the same kind of a course in drawing that I had been given in college, even using the same textbooks. Also, I had pupils do considerable copying of drawings from blueprints.

"Some years later I began to teach mechanical drawing to prospective teachers, having had, in the meanwhile, some additional instruction along this line in one of the leading universities. Here I really began to study aims, methods of teaching and courses of study in mechanical drawing, and became convinced, as have many other teachers, that the old type of course and the old methods were not best for teaching this subject to beginners, whether in high schools, normal schools or institutions of any other type.

"In trying to develop a course and a method that would be suitable for beginners, that would satisfy the requirements of good pedagogy, and that would, in the most effective way, develop on the part of the pupil the kind of ability desired, I have studied every textbook and article on this subject that I could obtain, have discussed the matter with many teachers and have tried many experiments. *Mechanical Drawing for Beginners* is the result of this study and experience.

"It may seem as if the results, as shown by the book, are rather insignificant considering the time covered in this experience, but I am convinced,

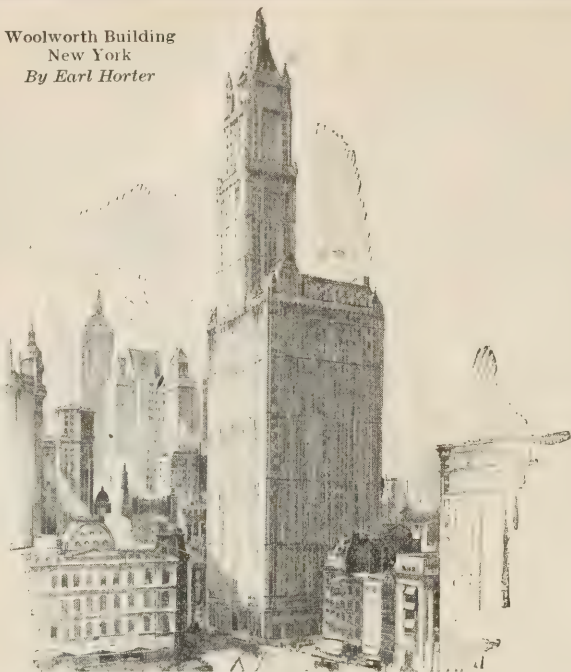
judging from the results I am getting from my students, that I am teaching mechanical drawing better now than ever before, and the material and method given in this little book constitute an important factor in this teaching.

"I do not lay claim to originality in this. I have simply tried to incorporate into a simple direct course an explanations covering the fundamentals of the subject the best ideas of teaching. The problems in the book are not an essential part of the course, as any set of problems that fit the scheme could be used equally well. The problems merely furnish a means for the application of principles and methods of procedure while the student is learning these and acquiring skill and power in the use of drawing.

"All teachers will doubtless agree that the making of working drawings is the most important application of mechanical drawing and that the draftsman must have, first of all, a thoro understanding of the fundamental principles upon which such drawings are based, and be conversant with the best practice and procedure in making such drawings. *Mechanical Drawing for Beginners* attempts to give these in a simple, direct way for the instruction of beginning students and does it in a way that no other book has done. It seems to me that it should be of real help to teachers in presenting this subject. It seems to me that it should be of use in high schools, normal schools, evening schools, consolidated schools or in any school where beginning classes are being taught. It is however elementary in character and is not intended for use in colleges and higher technical schools."

The Manual Arts Press has just issued a *Personal Expense Book* for school and college students which is in line with the present "thrif" movement. It provides a simple modern system of keeping a record of personal expenses. The distribution is made when each item is entered. A double page is devoted to each month and a double-page summary for the year. This book has been prepared by Mrs. Janet Cation Thurston, formerly associate professor of home economics at the Iowa State College of Agriculture and Mechanic Arts at Ames, Iowa. The book is 5½ by 8¼ in., is bound in paper with reinforced back, and has round corners. While it is intended especially for young men and young women—school and college students, it is readily adapted to more general use. The price of the book is 40 cents.

Woolworth Building  
New York  
By Earl Horter



DIXON'S ELDORADO has that elusive, yet very important quality which artists call "responsiveness."

"I cannot tell you how I draw," said one old master. "I simply draw. And looking at my work I tell you — *that is how!*"

So with the responsiveness of Dixon's Eldorado. You cannot describe it in so many words: you can but sense it in your touch and see it in your work and in the work of your pupils.

**DIXON'S  
ELDORADO**  
*"the master drawing pencil"*

**SAMPLE OFFER TO TEACHERS**

Dixon's Eldorado is made in 17 leads. Tell us whether you teach mechanical or freehand drawing and we will mail you suitable samples.

JOSEPH DIXON CRUCIBLE COMPANY, Pencil Dept. 19-J, Jersey City, N. J.

## PRANG ART BOOKS

### "THE THEORY AND PRACTICE OF COLOR."

By Bonnie E. Snow and Hugo B. Froehlich. The most authoritative work on "Color" issued in this country. Illustrated with hand painted "Color Charts" of great value. Large quarto, price \$4.00; by mail, \$4.25.

### "ART SIMPLIFIED." (Revised Edition.)

By Pedro J. Lemos and John T. Lemos. A book of practical instruction in Art for advertisers, commercial artists, teachers and students. 22 full-page plates, 175 pages. Price \$4.00; by mail, \$4.25.

"LETTERING"  
By Thomas Wood Stevens, of Carnegie Institute. The standard work on the subject for students and artists. 110 full page plates. Large quarto. Price, \$3.00; by mail, \$3.25.

### "CONSTRUCTIVE ANATOMY"

By G. B. Bridgman, Art Students League. The newest and most authoritative book on the subject. Price postpaid, \$7.50.

### "A SHORT HISTORY OF ART"

By De Forest and Caffin. The most comprehensive single volume on the subject, comprising 758 pages with 289 illustrations. Price, \$4.00; by mail, \$4.25.

### "FIRST LESSONS IN BATIK"

By Mary C. Scovel, Head of the Normal Department, Art Institute of Chicago. A practical handbook, giving full information for Batik dyeing on many different fabrics. Beautifully illustrated with cuts from original Javanese Batiks. Price, \$1.50; by mail, \$1.60.

### "PERMODELLO MODELING"

By Bonnie E. Snow and Hugo B. Froehlich. Gives full directions for innumerable uses of "Permodello," the permanent Modeling Clay, which sets like concrete without firing. Beautifully illustrated. Price, \$1.50; by mail, \$1.60.

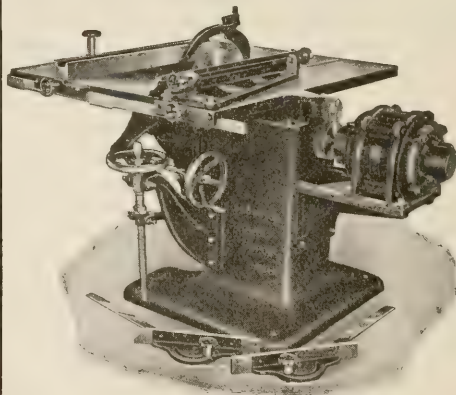
Send for Descriptive Circulars and New "Prang Bulletin."

## THE PRANG COMPANY

30 Irving Place, New York City  
1922 Calumet Ave., Chicago

## SAW TABLES

For MANUAL TRAINING



This cut shows our motor driven spiral gear saw table. No countershaft, no belts. Tilting or stationary tops. Write for circular and prices on our entire line. Address

## ALEXANDER DODDS CO.

451-453 Monroe Ave., N.W.  
GRAND RAPIDS, MICHIGAN, U. S. A.



# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.

WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City.

EDITORS FRANK M. LEAVITT Associate Superintendent Public Schools, Pittsburgh, Pa.

WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON,

Published monthly by The Manual Arts Press, 237 N. Monroe St., Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

---

## CONTENTS

---

THE MINNEAPOLIS CONVENTION.....	Charles A. Bennett 277
TOOLS OF THE SHOE SHOP.....	Harry E. Wood 282
TEA WAGON (With working drawings).....	Dean M. Schweickhard 285
CHANGES IN THE TEACHING OF MECHANICAL DRAWING.....	W. F. Willard 291
EDITORIAL REVIEW FOR THE MONTH.....	294
Educational Films in the Future—Is it Desirable to Pay Pupils a Wage?—School Funds in California—E. A. Wreidt goes to Indiana.	
A POINT OF VIEW—An Educator's Impression of California.....	Arthur Dean 298
WASHINGTON CORRESPONDENCE.....	William T. Bawden 301
Teaching the Thing You Like to Do Yourself.	
IN FOREIGN COUNTRIES.....	302
The Rehabilitation of Vocational Education—Day Continuation Schools Opened in London—Vocational Education in Canada.	
PROJECTS, PROBLEMS AND NOTES.....	304
Questions on Woodworking—The Aeroplane—Shovel—Ice Tongs—Waste Basket—Window Seat and Chest—Grey Finish for Oak.	
CURRENT PUBLICATIONS.....	310
FIELD NOTES.....	IV
National Association of State Directors for Vocational Education—The Vocational Schools of Camp Travis—Minnesota News—California Notes—Labor is Heard at U. S. Commissioner's Conference—Around New York—Southeastern News—Teacher Training Classes in Connecticut.	
TRADE NOTES.....	XXIV
Commercial Exhibit at the Minneapolis Convention.	
BOOK NOTES.....	XXXVII

*This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.*

---

Entered at the Post Office at Peoria as Second-Class Matter. Copyright, 1920, The Manual Arts Press.

## FIELD NOTES

### NATIONAL ASSOCIATION OF STATE DIRECTORS FOR VOCATIONAL EDUCATION

THE Federal Board for Vocational Education called a conference in November at Salt Lake City for state directors and State Boards for Vocational Education, representing the states west of the Mississippi. During this conference the question of a national association of state directors was discussed. The general scheme was presented to the conference by C. V. Williams of Kansas, who also discussed the advantages to the development of vocational education of an organization of this kind—an organization with which the Federal Board may take up problems of interest to the states and where administrative problems in which state directors are especially concerned may be emphasized.

It was the unanimous opinion of the directors present and of the Federal Board that there is a definite need for such an organization. The interest was so keen that it was decided that a temporary organization be effected. A committee was appointed to formulate objectives and plans for temporary appointments. The committee report, which is as follows, was approved by the full conference:

#### Objectives:

1. To study policies of administration and supervision.
2. To formulate plans of co-operation with the Federal Board.
3. To consider needed legislation and best means of securing the same.
4. To disseminate information concerning vocational education and best methods of promotion.
5. To serve as a clearing house in which all matters affecting the organization of vocational education in the states may be taken up.

#### Appointments:

##### *Board of Directors:*

L. A. Wilson, New York,  
John Callahan, Wisconsin,  
E. R. Snyder, California,  
F. J. Hubbard, Mississippi.

##### *Officers:*

C. V. Williams, Kansas, President.  
W. A. O'Leary, New Jersey, Vice-President.  
Ruth C. Miller, New Mexico, Secretary.

A spring meeting in the Central States was recommended by the committee. Kansas City was sug-

gested as the place, and the date of meeting, May 9th. At this meeting a permanent organization can be effected.

C. V. Williams, the president, states in a letter which he has sent out to the state directors: "The aim of the directors at the Salt Lake meeting was to make this Association mean to the development of vocational education in the states what the American Association of Agricultural Colleges has meant in the development of our Land Grant institutions.

\* \* \* \* It is not purposed to draw the state directors away from any professional associations such as the National Society or the Vocational Association of the Middle West, but rather to form an official organization of those responsible for the direction of vocational policies in the states with which the Federal Board may feel free to deal. The meeting of this Association may be called in connection with professional associations, such as the National Society, when such meetings happen to be called in central locations and within reach of all the states concerned."

A meeting has been called at the time of the meeting of the National Society at Atlantic City. The purpose of this meeting is to discuss the program of the meeting to be held in May, and to decide definitely upon the place of holding the meeting.

RUTH C. MILLER, *Secretary.*  
Santa Fe, New Mexico.

## FROM THE SOUTHWEST

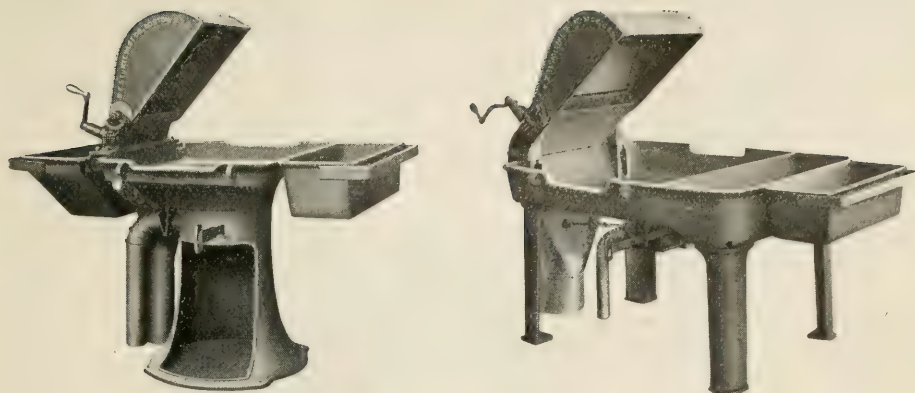
### THE VOCATIONAL SCHOOLS OF CAMP TRAVIS

THAT the vocational schools of the army are not discontinued because the war is over is evidenced by a very interesting letter received from Arthur B. Mays, supervisor of vocational training, Camp Travis, Texas.

The number of different courses offered and the variety of work engaged in by the soldiers indicate that the government means business in carrying out its vocational school program. Mr. Mays makes the following statement regarding the organization of these schools:

"There are two types of vocational schools in the army: those known as detail schools and those known as volunteer schools. The detail schools are taught by enlisted personnel and are only nominally under the supervision of the education office.

"The vocational department is organized under the educational officer with a supervisor of vocational training in charge of vocational work in all these schools. The method of instruction used is



## Sturtevant Stationary Forges

Are built in sizes and types to cover the entire range of forge work. Their design, construction and wide range of adaptability has won pronounced approval from instructors in the many technical and manual training schools where this equipment is used. It is approval based upon satisfactory performance. The fact is that these forges are easy to work with, convenient, and trouble proof. The many valuable qualities of these forges tend greatly to inspire confidence and interest in the student. Make a personal investigation of an actual installation and reflect with confidence upon the organization back of Sturtevant equipment. Communicate with us and we will gladly cooperate.

*Ask about our complete Forge System.*

### B. F. STURTEVANT COMPANY

HYDE PARK, BOSTON, MASSACHUSETTS

AND ALL PRINCIPAL CITIES





## FIELD NOTES—(Continued)

that developed by the war department under the direction of Prof. Selvidge, of the University of Missouri. Manuals of instruction are published in all the subjects."

At Camp Travis, the detail schools which report thru the education office are the schools of lithography, telegraphy, wireless telegraphy, telephony, and horseshoeing. The school of horseshoeing is taught by civilian instructors and is under the management of the education office, tho the students are detailed.

There are five different volunteer schools in the vocational department. Each of these schools has four or more instructors. The schools are classified as follows:

1. The school of trades, in which there are classes in carpentry, interior wiring, plumbing, sign painting, mechanical drawing, and printing.

2. The school of agriculture, with classes in general agriculture, animal husbandry, and horticulture.

3. The school of music which has seven classes. All who attend this school are preparing for places on military bands.

4. The school of business, having classes in stenography, penmanship, typewriting, bookkeeping, and business information.

5. The automotive school, which is divided into the following three divisions:

- (1) The auto-mechanics course. This includes classes in motors, differentials, front axle, steering, transmission and clutch, ignition and carburetion, battery, chassis, disassembly and assembly, and inspection.
- (2) Chauffeurs classes which include auto-driving, truck driving, tractor driving, motorcycle driving, and repairing.
- (3) The auto-trades section which includes classes in machine shop, acetylene welding, tire repairing, upholstery and top work.

Practically all of the instruction given in these subjects is based on productive work. Mr. Mays states: "The work in Camp Travis schools has been very successful and a very large number of soldiers are taking advantage of the unusual opportunity offered to learn a trade."

—E. E. ERICSON.

## MINNESOTA NEWS

**I**N accordance with a law passed at the last session of the state legislature, the State Board of Education has made an exhaustive study of the public school situation in Minnesota. The Board

had a special investigation made of the administration of state aid, and has also prepared plans for the unification of the education laws. The Board was directed to make plans whereby these laws would be "more readily understood, and more effective in execution." The result of this work is the preparation of a group of proposed acts which will be presented to the present session of the legislature.

Four of these bills will be of interest to vocational teachers, particularly the part-time and evening school bills. In addition to the two mentioned are the amended child labor bill and the amended school census bill.

The compulsory part-time bill provides for the continued education of youths up to 18 years of age. There is also a provision that part-time classes of a voluntary nature can be carried on for those over 18 years. This provides for apprentice training in connection with industries.

The bill provides for a minimum of 144 clock hours of instruction per year, during the regular school year, tho summer sessions for those over sixteen would be permitted. The instruction would be given during the regular school week, and in the morning only, on Saturday. The quite definite elimination of Saturday afternoon is now recognized as desirable.

Sharp "teeth" are written in the bill, effecting parent or guardian, employer, school officer, and the youths themselves. Summed up generally, the bill provides that all persons up to 18 years, unless they are high school graduates, or are at work must be in attendance at regular full-time schools. Those who are employed must attend part-time classes a minimum number of hours per year, between specified hours of the day. Subject to a few conditions it is essentially: "Be in school, or at work and part-time school." Liberal provision is made for state, or state and federal aid.

The amendment to the school census law provides for the extension of the school census to boys and girls of 18 years.

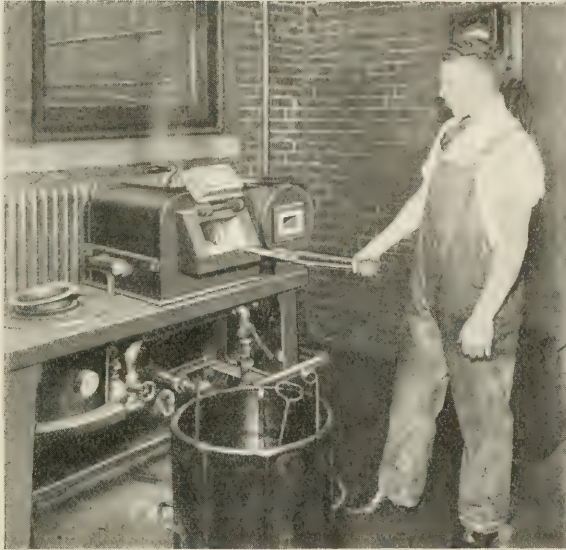
The amendment to the labor law provides that the employer must secure the necessary permit to employ any child between 14 and 18 years during the time the public schools are in session. The permit must be returned to the official who issued it on the termination of the employment of the child.

The amended evening school bill provides for all forms of evening school instruction for all persons over 16 years of age who can not attend day school. The instruction would be aided irrespective of whether the courses are trade extension or

# Use the Furnaces Expert Heat Treaters Prefer

Stewart  
Triple  
Purpose  
Furnace

In  
Pratt  
Institute  
Brooklyn  
N. Y.



Stewart  
Oven,  
High Speed  
Steel  
and  
Barium  
Chloride  
Furnaces  
All on  
One Base

**S**UPERVISORS of industrial education realize the importance of supplying school shops with quality equipment. Heat treating units should be selected with the same consideration as in manufacturing plants.

Stewart Furnaces for over twenty-five years have thoroughly satisfied manufacturers all over the country. They are rapidly becoming the standard for vocational and industrial schools.

Stewart Furnaces enable students in metal working trades to learn to do things in a practical, efficient manner. The thorough training possible with Stewarts makes them better shop men and better executives.

Wherever furnaces are used for hardening tools, dies, cutters, gears, etc., or for any heat treating operation, the name STEWART is a genuine assurance of accuracy and dependability.

*Industrial education supervisors  
should have our catalog No. 75*

**Chicago Flexible Shaft Company**  
1128 South Central Ave., Chicago

350 Broadway  
New York

Ry. Exch. Bldg.  
St. Louis

601 Kerr Bldg.  
Detroit



## FIELD NOTES—(Continued)

general education. Evening schools would be recognized as a regular branch of the public school system.

One-half of the salaries of evening school teachers would be paid from state funds in so far as such funds are available. In addition, attendance at evening school maintained under the rules established by the State Board would entitle a district to its pro rata apportionment of state school funds for all pupils not over 21 years, on the same attendance basis as for day schools. Each evening session of two or more hours would be counted the equivalent of one day.

JOHN F. FRIESE.

### CALIFORNIA NOTES

**I**N THE Field Notes of the January issue, there was a report of the manual training and vocational activities of the Los Angeles City schools. By way of contrast to the work done there, it will be interesting to note the situation in its friendly rival, the City of San Francisco. The latter has had manual training in its schools for many years; and, be it said to its credit, San Francisco was one of the first cities in this country to introduce manual training. But, in spite of the early start, there are as yet no full-time day courses of a strictly vocational character in its public school system.

This statement must not be taken to imply, however, that there are no vocational courses being given in San Francisco. On the contrary, and this may in part explain why the public schools have no day vocational courses, there are three most excellent private schools giving such courses. These schools are the Lick, the Wilmerding, and the Cogswell. The former two schools have long been under the able leadership of George W. Merrill, and the latter school, for some years past, has been in charge of George B. Miller.

The Lick School, which is officially known as the California School of Mechanical Arts, receives boys who have completed the grammar school and who are favorably recommended by their teachers. The aim of the school is to keep the grade of the academic work down to the plane of the best high schools. The shops are devoted to the practical construction of machinery, buildings, etc. Much of the instruction in mathematics, and science is made to serve the needs of young men who propose to enter upon industrial careers. The trade and technical courses include carpentry, cabinet and mill work, model making and boat building, pattern-making, forge work, molding, plumbing, steam fitting, and sheet-metal work, stone work, including brick lay-

ing, concrete construction and plastering; electrical work; machine shop practice; auto practice; industrial chemistry, architectural drawing, machine and ship drafting. Some of these courses are given in the Wilmerding School.

The Cogswell School, which accepts about the same grade of students as are accepted by the Lick School, provides for the boys courses quite similar to those given in the Lick and Wilmerding Schools, tho such a large variety of courses is not provided.

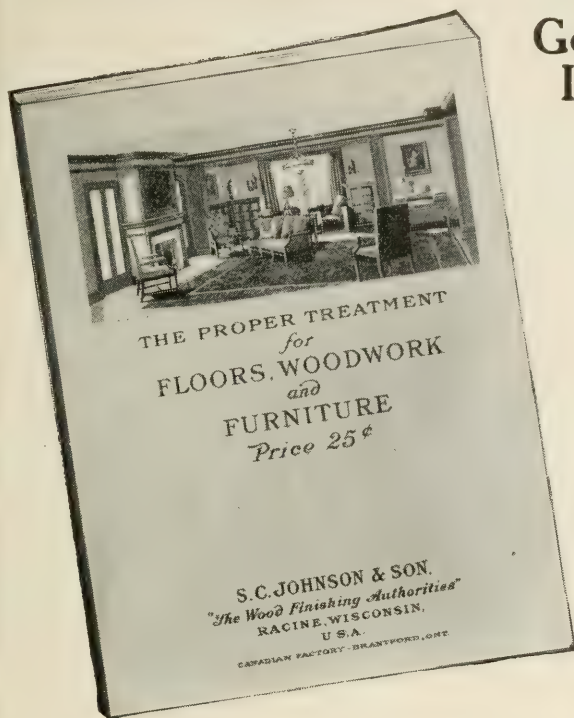
From its inception, manual training in the San Francisco schools has been confined largely to wood-work in the seventh and eighth grades, and later to various courses given in the Polytechnic High School. In the high school, the usual group of manual training courses is offered, embracing wood-work, metal work, forging, pattern making, cabinet making, and foundry. All these courses have been offered from the first and are still being given to this day.

E. C. Carniglia, who was for a long time head of the manual training department of the Polytechnic, and later became also, vice-principal of the school, is now the director of all manual training in the San Francisco schools, both elementary and high. This position, Mr. Carniglia assumed last fall when the former supervisor of manual training of the elementary schools, Andrew P. Hill, resigned to pursue further study at Stanford University. In addition to his study at Stanford, Mr. Hill is spending part of his time in teaching manual training in Palo Alto which is the town adjoining the grounds of the University.

Just now San Francisco is in the throes of two new movements. One of these is directed toward the establishment of part-time education for the boys and girls between the ages of sixteen and eighteen who have left school. Mr. Carlsen, the master hand in the organization of this work, has the title of director of part-time education. He is most ably assisted in his work by Captain Barnes. The latter is engaged in coordinating the school studies of the part-time pupils, with their work in shop, factory, or store.

The other new movement is aimed toward the creation of public opinion which, it is hoped, will help to bring about the establishment of necessary vocational courses. There are three fields of work from which, just at this time, the strongest urge is coming; these are watchmaking, hair dressing (in so-called beauty parlors, and all that goes with that business), and dental assistant's work. The need for skilled ability in these three fields is so pressing at present, that committees representing





## Get this Valuable Instruction Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing and should be in the hands of every wood finishing instructor. It is full of valuable information on finishing all wood—soft and hard. Considerable space is devoted exclusively to the finishing of manual training models. This book is the work of experts—illustrated in seven colors.

### How To Get It Free

Go to your best dealer in paints and ask for a copy of Johnson's book "*The Proper Treatment for Floors, Woodwork and Furniture.*" If he cannot furnish this book ask him to send your name and address to us and we will mail you a copy free.

## JOHNSON'S ARTISTIC WOOD FINISHES

Johnson's Artistic Wood Finishes are particularly adapted for manual training work as they may be applied by the youngest and most inexperienced pupils with good results. Johnson's Artistic Wood Finishes are standard for manual training as they are being used all over the United States and Canada for this purpose.

The perfection of Johnson's Artistic Wood Finishes has been the work of years. You get the benefit of our experience—of our money expenditure—of our knowledge of woods. Our plant is equipped with the best up-to-date mills and machinery and every department is in the hands of experts.

Our line of Artistic Wood Finishes is complete—it includes:

*Johnson's Prepared Wax*

*Johnson's Wood Dye*

*Johnson's Crack Filler*

*Johnson's Paste Wood Filler*

*Johnson's Perfectone Undercoat*

*Johnson's Perfectone Enamel*

*Johnson's Electric Solvo (varnish remover)*

*Johnson's Floor and Finishing Varnishes*

You will find this entire line described and listed in our booklet. Any time specific information is desired, or whenever you want specially finished wood panels, do not hesitate to write us. We solicit correspondence with Manual Training Instructors.

**S. C. JOHNSON & SON, Dept. MT3, Racine, Wis.**

*"The Wood Finishing Authorities"*



## FIELD NOTES—(Continued)

the associations of employers in these businesses, have already waited upon the San Francisco Board of Education and the city superintendent of schools, to present their needs and press their claims. Already, Dr. Edwin R. Snyder, state commissioner of vocational education, and his assistant in trade and industrial education, John C. Beswick, representing the State Board of Education, have shown in many ways that the State Department appreciates the urgent need presented by these various business men. Both of these state officers have met with each of the three business organizations mentioned; they have not only pledged the support of the state office, but have also assisted in providing for further aid in presenting the claims and in organizing courses.

### LABOR IS HEARD AT U. S. COMMISSIONER'S CONFERENCE

At the Regional Conference of Education held under the direction of the U. S. Commissioner, P. P. Claxton, at Sacramento, during the early part of the month of December, one of the most interesting addresses was that given by James W. Mullen. Mr. Mullen is the editor of the *Labor Clarion*, the official journal of the San Francisco Labor Council. His paper was entitled "The Relation of Education to Wealth and Revenue—a Matter of Statesmanship." Mr. Mullen pointed out in his paper, that all kinds of education which had a practical application are of material value to the Nation and return in kind more than they cost.

Very significant was Mr. Mullen's introductory statement aiming to justify the place of practical education in a comprehensive scheme. He pointed out that civilization and progress began in this world when human beings began to realize the power of their brains, and social development has proceeded, he added, in proportion to the brain power applied to the acquisition of knowledge. As always in the past, so today, a man's position in life, the manner in which he has lived, his influence upon men and things is governed very largely by the growth, the development, and the use to which he has put his brain to the solving of the problems of every-day life. While education is good in itself because of the pleasure and satisfaction it brings, and tho it is well worth while whether one makes any money out of it or not, still, asserted the speaker, the bread-and-butter aspect of education can not be neglected because the very progress of humanity depends upon the economic use to which the people put their education.

Much stress was placed by Mr. Mullen on the influence which the organized labor movement of the United States has had in bringing about state supported public schools. He laid emphasis, further, upon the favorable position which the American Federation of Labor has taken, and is at present taking, toward all forms of industrial education. He made clear that the United States, relatively speaking, is sadly lacking in sufficient vocational education; and to prove the economic importance of such education he brought to bear upon the problem the relation of education to wealth and revenue as observed in the industrial progress of England and Germany during recent years. He showed by figures and dates that the great superiority of the German increase in manufactures began from the time it instituted systematic vocational training—its establishment of industrial and technical schools.

He also pointed out that the child that goes to work at fourteen, has an earning capacity at twenty-five just half as great as the child who stays in school until he is eighteen.

### DEVELOPMENT OF TRADE AND INDUSTRIAL EDUCATION

It is interesting to note that trade and industrial education in this state is developing most rapidly. In 1917-18, there were about forty classes with an enrollment of more than 750 pupils. Two years later, there were over twice as many classes with an enrollment three times as great. An interesting fact is that of sixty-six full-time classes maintained during the past year, twenty-nine gave courses in auto practice, twenty in machine shop work, thirteen in electrical trades, five in sheet-metal, four in dressmaking, four in carpentry, three in pattern-making. Of the remainder two were courses in restaurant cooking and one each in trade art, industrial chemistry, mechanical drawing, and millinery. One looking over this list may be surprised to note the relatively small number of classes in carpentry, a field for which there is a rather great demand for workers; the same is true with reference to mill cabinet work in which field no classes are recorded.

—CHARLES L. JACOBS.

### AROUND NEW YORK

THE first meeting of the year of the School Crafts Club was held at Hoboken, N. J., Saturday afternoon, January 15, 1921. About sixty members assembled at the Library Building, 506 Park Ave., at 2 P. M. The party was divided into two groups one under President Richard A. Beyer, and the



*Platen Presswork*

## Platen Presswork

*Provides the Pupil with a Picture of His Efforts*

ALL the various technical processes of printing possess fascination for the average healthy boy, but none of these processes appeal to him more than presswork. Platen presswork is the first step in producing the actual printed product. Only the purely technical and vocational printing courses include cylinder presswork, but all school equipments include platen presses.

The climax of the pupil's enthusiasm is reached when he takes the first proof of his job from the press. Here

is something he has produced with his own "hands, brain and heart." He is anxious to show it to his comrades, parents, and friends, and immediately this printed product assumes a community interest. Only those adults who have accomplished something which they consider their masterpieces can realize the joy and satisfaction of the pupil who takes his first printed sheet from the press.

If you desire to install in your schools an activity that will arouse and maintain the interest of your pupils, write to

F. K. PHILLIPS, *Manager*, EDUCATION DEPARTMENT

AMERICAN TYPE FOUNDERS COMPANY

JERSEY CITY, NEW JERSEY

BOSTON, MASS.  
NEW YORK CITY  
PHILADELPHIA, PA.  
BALTIMORE, MD.  
RICHMOND, VA.

LOS ANGELES, CAL.

BUFFALO, N. Y.  
PITTSBURGH, PA.  
CLEVELAND, OHIO  
CINCINNATI, OHIO  
ATLANTA, GA.

CHICAGO, ILL.  
DETROIT, MICH.  
ST. LOUIS, MO.  
MILWAUKEE, WIS.  
MINNEAPOLIS, MINN.

WINNIPEG, CANADA

KANSAS CITY, MO.  
DENVER, COLO.  
PORTLAND, ORE.  
SAN FRANCISCO, CAL.  
SPokane, WASH.







## FIELD NOTES—(Continued)

other under Secretary Philip M. Wagner of the club. President Beyer escorted his party thru Stevens Institute. Mr. Beyer is a graduate of Stevens and felt at home in showing to the members the splendid up-to-date equipment in the museums, shops and laboratories of the Institute.

Secretary Wagner escorted the other group thru the factory of Keuffel & Esser Co., the well-known manufacturers of drawing instruments, telescopes, transits, papers, etc. Keuffel & Esser manufacture all of their own glass products, and during the war put out a valuable periscope. The visit was intensely interesting to all the teachers who saw how the articles they use every day are made.

After the excursions a short business meeting was held at President Beyer's office, and a number of very interesting educational problems were discussed and the program for the spring outlined. The following were proposed for membership: Paul Asher, manual training teacher, Orange, N. J.; W. A. Brock, manual training teacher, Bayonne, N. J.; Frank M. Devonald, manual training teacher, Orange, N. J.; Byron G. Dreifoos, art instructor, Fawcett School of Industrial Arts, Newark, N. J.; George F. Schmidt, manual training teacher, Bayonne, N. J.

The next meeting will be held on February 19.

THE NEW YORK TEXTILE SCHOOL is located at 124 West 30th St. The courses offered are:

1. General Textiles. (Training in selling and buying Fabrics.)
2. Applied Textile Designing.
3. Chemistry of Dyeing.
4. Costume Course.
5. Textile Manufacturing and Engineering.

Graduates receive a four-year Regent's Diploma in academic and technical subjects, and are in demand for responsible positions at good wages. A two-year course in a regular high school is necessary before a student can enter on a course in the Textile School.

Louis Siegbert, president of the Cotton Converters Association, and Herman A. Mety, former controller of New York City, and president of the H. A. Mety Dyestuff Co., visited the school recently.

Mr. Siegbert and Mr. Mety deserve a great deal of credit and thanks for the part they have played in helping to establish the school. Mr. Siegbert has been instrumental in getting machinery and supplies for the weaving and finishing departments, and is chairman of a committee appointed by the Cotton Converters Association to work in conjunction with the Board of Education in putting the school on a firm basis.

Mr. Mety is an ardent supporter of the school, and it is to him that the school owes its dyeing department. He has personally expended several thousand dollars in fully equipping the laboratory with apparatus, chemicals and dyestuffs, making the same one of the finest experimental dye-laboratories in the country. Mr. Mety is a member of the committee appointed by the Dyestuff Institute, to look after the interests of the school. Mr. J. Matthews, the foremost authority on dyestuffs and textiles is chairman of this committee.

At the New York Textile School an informal meeting was held Tuesday evening, Jan. 25, by the Fine Arts Federation to create a committee to provide art scholarships in the school. Mr. Gustave Straubenmuller, associate superintendent of schools, presided. President La Guardia of the Board of Aldermen, told of artistic talent being discovered among young people whose circumstances would not permit them to attend school. He wished to start a movement to raise money for scholarships.

W. Laurel Harris, director of the art center, said that "few people realized the importance of American textile art. Those who had talent in a majority of cases were compelled to work. In the ordinary course of trade it is impossible to teach much because so much attention is needed for every day work. In other countries the governments subsidize these talented people, but in America the government does not take care of individuals."

Mr. Straubenmuller said that the municipality should not have control of the scholarships, and, thanks to the manufacturers, the school should become one of the best of its kind in the country. The need of developing the artistic talent of boys and girls who were too poor to go to school was emphasized.

Miss Monahan, a teacher of art, added that America must stop going abroad for high-salaried textile artists. It should develop them at home.

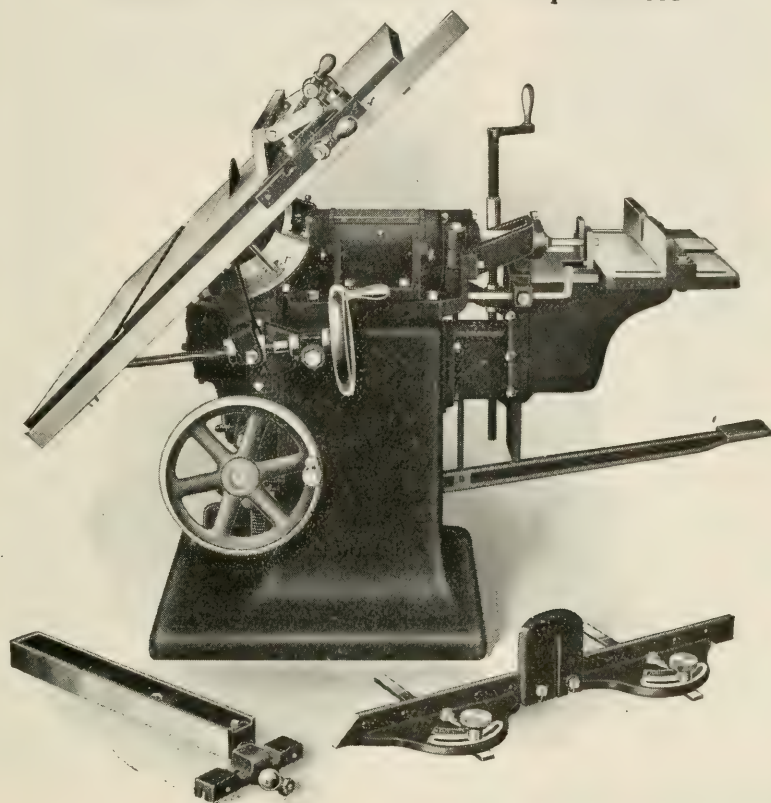
—W. H. DOOLEY.

## SOUTHEASTERN NEWS

A COURSE for the training of teachers in the textile industry is being given at the Agricultural and Engineering College, Raleigh. The textile department in this college is well equipped with the various types of machinery, including bleaching and dying, used in the manufacture of textiles. Prof. Thomas Nelson, head of the textile department, is in charge of the work. There has been quite a demand in this section for competent instructors in the various lines of the textile industry; the establishment of evening and part-time

# The Latest Development for the Manual Training Room

Safety—Convenient—Dependable



## No. 500 "Lightning" Direct Motor Drive Variety Saw

Motor is mounted directly on column, impossible to get out of line. Rotor direct on arbor. No countershaft required. No belts. Table can be tilted to any angle up to 45°. Stopped and started by totally enclosed fused switch.

*Write today for Bulletin R-13.*

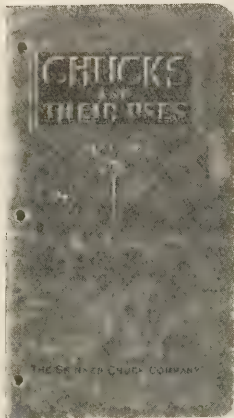
### J. A. FAY & EGAN CO.

Established 1830

World's Oldest and Largest Manufacturers of Woodworking Machinery  
730-750 W. Front St.

Cincinnati, Ohio

# CHUCKS AND THEIR USES



THE student and teacher of machine shop practice will find this booklet of special interest. It gives reliable information regarding the standard types of chucks, their uses and care. It begins with the history of chucks and the story of their development, details the various types, offers suggestions regarding the proper way to fit a chuck to a lathe and presents a number of succinct and homely don'ts for the teacher of lathe work. It is a compact, easily understandable, well illustrated, 56 page booklet, and is published for free distribution by the well-known chuck manufacturers,

**The Skinner Chuck Co.**  
New Britain, Conn.

**FREE USE THIS COUPON**

THE SKINNER CHUCK CO. ....1921  
New Britain, Conn.

Please mail me a free copy of your booklet, "Chucks and Their Uses," advertised in the **Manual Training Magazine**, and for which I am under no obligation.

Name.....

Position.....

Street and No.....

City and State.....

## FIELD NOTES—(Continued)

schools has been seriously handicapped by the shortage of trained textile instructors. The teacher training course will add another unit of service offered by the textile department for the Southeast.

Several large corporations have already recognized the usefulness of a man who has a technical textile education coupled with organization and teaching ability, and they are very eager to secure such persons for the mills and for their communities.

HIGH POINT, N. C., "the Grand Rapids of the South," and second in the production of furniture, has courses in woodworking, design, and mechanical drawing in the high school. Evening courses are also being given. Ralph G. Knight is in charge.

PROVISION for training in several branches of knitting of hosiery has been made for the girls at the Whitted School (colored) in Durham. One of the local hosiery mills employs colored operators, and the training received at the school is beneficial to girls entering employment at the mill.

Two skilled operators, one in knitting and one in looping, come from the mill to the school at 8:30 in the morning and remain during the entire school day which closes at 3:30. After school they return to the mill. The pupils who come from the fifth to the eighth grades inclusive, spend one hour each day at the work. Since pupils of this type are, on the average, over age, skilled training can be offered lower down in the grades. Each teacher has three pupils during a class period. Standard power machines are used for the work.

J. WARREN SMITH, formerly of Miami University, Ohio, has charge of the industrial work at Raleigh. Courses in woodwork, drawing and printing are given. The printing department publishes a monthly school bulletin entitled, *Purple and Gold*.

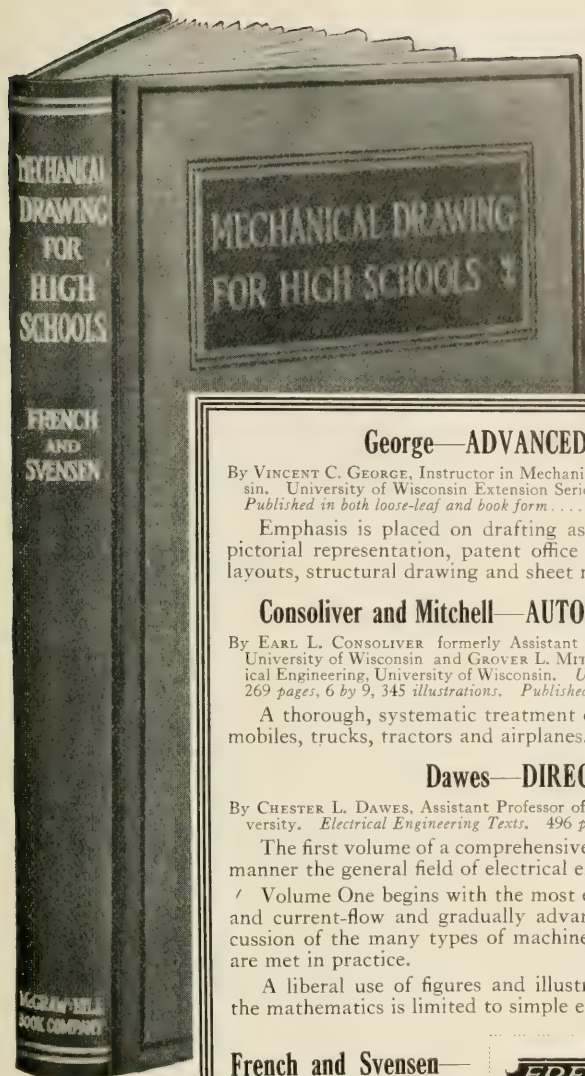
THE AGRICULTURAL SCHOOLS in North Carolina receiving Smith-Hughes aid, are required to have a shop and, at least, a minimum assortment of tools as designated by an official list. This equipment must be supplemented by additional tools each year for a period of two years. The complete list provides a good assortment of tools for farm construction and repair work.

THE FARM ENGINEERING DEPARTMENT at the State College, Raleigh, has issued a bulletin on Farm Mechanics by Dean Carter.

—FOREST T. SELBY.

THE EASTERN ARTS ASSOCIATION will hold its annual convention in the city of Baltimore on March 24th to 26th. A feature of the program will be an exhibit of the work of the members of the Association. Such an exhibit last year at the meeting in





# New McGraw-Hill Books for Vocational Schools

## George—ADVANCED SHOP DRAWING

By VINCENT C. GEORGE, Instructor in Mechanical Engineering, University of Wisconsin, University of Wisconsin Extension Series. 147 pages, 6 x 9 137 illustrations. Published in both loose-leaf and book form..... \$1.60

Emphasis is placed on drafting as applied to such special subjects as pictorial representation, patent office drawings, electrical drawing, piping layouts, structural drawing and sheet metal work.

## Consoliver and Mitchell—AUTOMOTIVE IGNITION SYSTEMS

By EARL L. CONSOLIVER formerly Assistant Professor of Mechanical Engineering, University of Wisconsin and GROVER L. MITCHELL Assistant Professor of Mechanical Engineering, University of Wisconsin. University of Wisconsin Extension Series. 269 pages, 6 by 9, 345 illustrations. Published in both loose-leaf and book form..... \$2.50

A thorough, systematic treatment of the ignition systems used on automobiles, trucks, tractors and airplanes.

## Dawes—DIRECT CURRENTS

By CHESTER L. DAWES, Assistant Professor of Electrical Engineering, Harvard University. *Electrical Engineering Texts*. 496 pages, 5½ x 8½, 399 illustrations..... \$4.00

The first volume of a comprehensive two-book course covering in a simple manner the general field of electrical engineering.

Volume One begins with the most elementary conceptions of magnetism and current-flow and gradually advances to a more or less thorough discussion of the many types of machinery, transmission devices, etc., which are met in practice.

A liberal use of figures and illustrative problems has been made, and the mathematics is limited to simple equations.

## French and Svensen— MECHANICAL DRAWING FOR HIGH SCHOOLS

By THOMAS E. FRENCH and CARL L. SVENSEN, Department of Engineering Drawing, the Ohio State University. 221 pages, 6 x 9, 444 illustrations..... \$1.50

A text with problem layouts for a two-year high school course.

## FREE EXAMINATION COUPON

McGRAW-HILL BOOK CO., Inc.  
370 Seventh Ave., New York

You may send me on 10 days' approval

.....  
.....

I agree to pay for the books or return them, postpaid, within 10 days of receipt.

Signed .....

School .....

Official Position .....

Address .....

..... M T W T F S S

McGraw-Hill Book Co.

INC.

370 Seventh Avenue, New York

Examine  
These  
Books—  
Send for  
Copies on  
Approval

## THE STOUT INSTITUTE

### Nine Weeks Summer Session

June 27 — August 26, 1921.

Regular Annual Session:

September 12, 1921 — June 2, 1922

The long summer session gives opportunity for students to secure a full semester's credit in shop or laboratory courses by lengthening the periods for this work during the summer session. A half semester's credit can be secured in five hour academic courses.

Summer Session credits apply on work required for the diploma or degree given by The Stout Institute.

The following groups of courses are offered:

*Vocational Education*—7 professional courses,  
23 shop courses.

*Industrial Arts*—28 courses.

*Household Arts*—26 courses.

*Science and academic work required for diploma or degree*—18 courses.

*Athletic Coaching*—5 courses.

Catalog giving outlines of courses, schedule of classes for summer session, and full information as to qualifications for entrance, requirements for graduation, and expenses for summer session or academic year, now in press and will be sent to anyone on application to

—L. D. HARVEY, *President*,  
The Stout Institute,  
Menomonie, Wis.

## 23

## Different Grinding Jobs

are illustrated in our No. 7 catalog. All are handled quickly and accurately with the Attachments furnished with the



MARK TRADE

REG. U. S. PAT. OFFICE

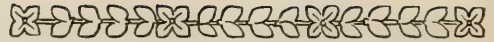
## Universal Grinder

This machine is convenient and easy to use, well built and can be depended on to turn out accurate work.

It is a fine all around machine for in addition to cylindrical, internal, straight and surface grinding it will handle the accurate sharpening of all sorts of machine shop tools.

*Catalog for the asking*

**Greenfield Machine Co.**  
Greenfield, Mass.



### FIELD NOTES—(Continued)

Boston was a very interesting innovation. This exhibit is not restricted to drawing and painting but work in any of the "decorative arts and crafts" is especially desired.

THE SUMMER MEETING of the National Education Association will be held July 4-8, 1921, at Des Moines, Iowa. Hotel reservations are already being made thru the local committee of which Charles F. Pye, 407 Youngerman Building, is chairman.

THE FOREST PRODUCTS LABORATORY, Madison, Wis., is offering three short courses in boxing and crating this season. The first was January 10 to 15; the second will be March 7 to 12; the third will be May 2 to 7. The Laboratory has issued a mimeographed outline of the course.

A RECENT NEWS ITEM sent out by the National Child Labor Committee contains the following paragraphs:

"The two most effective measures for keeping poor children from giving up school are mothers' pensions and continuation schools. All but eight states now have some form of mothers' pensions and several of them are asking for increased appropriations this year, or an extension of the age limit so as to give aid to more poor children. There are continuation or part-time schools in twenty-five states, and others are proposing them in their legislatures this year.

"The great value of the continuation school to the state is that it affords a means for keeping some control over working children until they are 18, and prevents their leaving school and then simply drifting if they happen to stop working."

THE ANNUAL EXHIBIT of the work of evening classes at Pratt Institute, Brooklyn, N. Y., will be held on March 10th. From 7:30 to 9:30 all shops, laboratories and drawing rooms in the School of Science and Technology will be open to the public.

AN EXAMINATION of persons desiring appointment as teachers of drawing in the high schools of New York City will be held at the Hall of the Board of Education, Park Ave., and 59th St., on Monday and Tuesday, March 14th and 15th, beginning at 9 A. M. each day. The salary schedule for the positions to be filled runs from \$1,900 to \$3,700 by annual increments of \$150. Allowance is made for previous experience.

V. E. SAYRE, formerly professor of manual arts at the University of North Dakota, is now in charge of similar work at the Fullerton, California, Union High School and Junior College. Fullerton is said to be the second richest school district per capita in the country. There are thirteen buildings on the

# Manual Training Magazine

MARCH, 1921

## THE MINNEAPOLIS CONVENTION

CHARLES A. BENNETT

THE seventh annual convention of the Vocational Education Association of the Middle West held in Minneapolis, February 9th to 12th, was a great success. The program was filled with good things; the hotel accommodations were satisfactory; the welcome on the part of the Minneapolis people was most cordial; and the attendance was even greater than in any previous year in Chicago. Last year there were 605 registered members at the close of the meeting; this year there were 650, and these figures do not include those who did not come to the meeting, but will pay their membership dues later. This large attendance was a surprise to many members because it was expected that after meeting with the National Society in Chicago last year the Association would hardly be able to maintain the high mark set at that meeting. It was feared, also, that holding the meeting so far north would decrease the number of registrations. The result therefore is especially gratifying, and reflects great credit on the energy of the officers and the local committee in their united efforts to accomplish the fine result. Important contributing factors, also, were the publicity agencies of the Bureau of Education which were used in connection with its own conferences, and the support of the commercial exhibitors who sent out hundreds of invitations. These exhibitors, also, thru their rental of space, helped to place the Association in a better financial condition than ever before. The Association can

now go forward with its progressive policy without fear of financial difficulties during the coming year.

In past years the presidents of the Association have all been men engaged in industrial education. For the coming year the president is J. A. James, professor of agricultural education at the University of Wisconsin. In recommending Professor James the nominating committee, thru its chairman, K. G. Smith of Michigan, stated that they believed the time had come when the Association should recognize in its highest officers branches of vocational education other than the industrial. Although the Association was started by industrial education men, the past two years have seen strong sectional meetings in agricultural education, commercial education, home economics and vocational guidance. The selection of Professor James is a fortunate one because he is known to have interests broad enough to reach out to all phases of vocational education as well as to be a recognized leader in his own special division.

While it is impossible in a few paragraphs to give an adequate report of the proceedings of the convention, or even to hit all the high points, it may be of some service to mention a few of its outstanding features as they impressed themselves upon the mind of one person, and it should be remembered that this person attended only a fraction of all the sessions of the convention.



## BUREAU OF EDUCATION CONFERENCE

The two dinner conferences on Wednesday evening conducted by the U. S. Bureau of Education gave the convention a brisk start. Dr. G. L. Swiggett was in charge of the one on commercial education, where there were 35 persons present. Dr. W. T. Bawden presided at the conference on industrial education where 110 were present.

The general topic of the industrial education conference was "Organization of Instructional Material in Individual Units." Dr. Bawden introduced the subject with the following statement:

"The enactment of legislation in 25 states requiring attendance upon continuation schools affords the opportunity, as it does a challenge, to develop a type and method of instruction differing from those of the all-day public school."

The speakers were Charles F. Perry, director of industrial education, Milwaukee; Prof. Edwin A. Lee, who read a paper prepared by L. R. Alderman, educational adviser for the U. S. Navy; and Dr. George E. Myers of the University of Michigan.

Mr. Alderman's paper discussed the new educational work of the Navy which is organized on what is essentially an individual instruction basis. In presenting the fundamentals of the problem he said,

In the Navy we did not want a land school brought to the ship any more than anyone would want a regular day school for continuation school pupils. In organizing school work on shipboard we found three discouraging conditions, as follows:

- (1) There was a very limited space that could be used for classroom work.
- (2) The Navy day is peculiar in that the watches or work periods of the men change from day to day, so that of any three men who may be available today for class work, only two of them may be available tomorrow. This condition makes classroom work almost impossible.

- (3) There are no trained teachers available, who have not other duties than teaching.

But to offset these adverse conditions are the following:

- (1) Strong motivation, i. e., a man has ever before him promotions. These promotions depend upon a man's ability to do, and understand what he does. He also has the motivation for study that travel brings.
- (2) He is working in a wonderful laboratory where the most modern of almost all kinds of machinery are being operated.
- (3) The student is on a ship where there are many men who are experts in all engineering subjects, and navigation, and who are real students along many lines.
- (4) There is considerable time for study on shipboard, as the day is a 24-hour day and the work period does not average more than 8 hours.

In the beginning it was necessary to get a start and then suit the work more and more to the needs of the student. We examined many courses put out by the extension departments of universities and correspondence schools, and we were delighted with the number and quality of the courses available.

After enumerating courses now offered in the Navy, Mr. Alderman quoted from Commander Van Hook, who said,

I consider that a large part of the interest and enthusiasm of the enlisted men is due to the Navy education system. These men are studying the very tools used by them in their every-day work. Their division officer is their instructor, and their leading petty officers are his assistants in their instruction. *This system cannot fail to produce results.*

Any educator in the country will agree that the ideal condition for the gaining of knowledge is the condition under which the student parallels his daily practical work by a thoro course of study of the subject in which he is specializing. Add to this study and practice, competent instruction by the officers and petty officers of the divisions, and the system cannot fail to produce excellent results.

Near the close of the paper Mr. Alderman said,

That teacher is most successful in a continuation school who is able to stimulate the student to the greatest possible extent to do things for himself and to occasion on the part of others the greatest interest and activity for the advancement of the student.

It may mean that this will call into existence a

new type of school. It may be that it will not be a large room full of desks, but that it may be a small room with a desk, some books, apparatus and only a few chairs. It may be that a good part of the teacher's time will be spent with the student in the industry. The time of meeting the student at the school or office will be a time of assignment, a time of testing and a time of inspiration.

Are we not, as teachers, too apt to try to carry too heavy a load? Shall we not in continuation school work try to use all the agencies that may be found for the education of our students?"

In discussing "the part-time class, a new task for a new teacher," Dr. Myers pointed out (1) that pupils in such schools do not take as much interest in the school work as do the regular school boys and girls; (2) that many part-time school pupils have left the regular school dissatisfied, (3) that on the average the pupils are of lower intelligence than the pupils of the regular day school; (4) that part-time pupils are forming habits, ideals attitudes of mind that, if they are the right ones, will be useful all their lives in their daily occupations.

Dr. Myers also recognized that the public schools cannot provide all the vocational education needed. There are parts of industrial education that can be obtained only in the industries. It should, therefore, be the work of school supervisors to help industries to organize their part of the instruction.

In the discussion that followed, several attempts were made to formulate a general statement concerning methods of instruction. Dr. Bawden summarized the statements made as follows: "In so far as class methods can meet individual needs they should be employed, but there are individual needs that cannot be met by class methods." James McKinney said that the question of method of instruction depends upon the objective from the pupil standpoint. He believes that the individual method is best in trade and technical instruction, and that both are needed in part-time schools.

In the first sectional meeting on industrial education "Standards in Part-Time Education" were discussed. This program was essentially the report of a special committee. A summary of legal standards was prepared by George F. Buxton. Administrative standards were treated by R. L. Cooley and standards for securing subject-matter were treated in a ten-page, printed report prepared by D. J. McDonald. Standards in the course of study were treated by R. T. Crago of Dunwoody Institute.

#### GENERAL SESSIONS

"Problems and Progress of Vocational Education in the Northwest" was the subject of the first general meeting. This included statements concerning part-time work under the Smith-Hughes Act in Minnesota by the state director of vocational education, E. M. Phillips; the new apprenticeship in Wisconsin, by John Callahan; re-educating the disabled soldier in Minnesota, by Oscar M. Sullivan; the Canadian plan for industrial and technical education by L. W. Gill, director of technical education in Canada; and plans and problems in industrial education in Ontario by Dr. James C. Miller.

One of the fine things of the convention was the good will, good fellowship and hearty cooperation in studying educational problems manifested by all the Canadians on the program.

Mr. Gill spoke first of the simplicity and brevity of the Canadian act of 1919 in comparison with our Smith-Hughes Act. The Canadian law has "the maximum of scope and minimum of detail." The Canadian way is to start something in a small way and let it grow to meet conditions. Age limits under the law are at the option of the provinces, but most of them have fixed the lower limit at 14 years. Control is in the hands of a

federal minister who has power to withhold the federal money.

In speaking of the origin of the law Mr. Gill said that the war brought the employers and the employes together, and, once together, they urged upon the central government the passage of an act providing vocational education. The legislators virtually said, "If capital and labor agree upon this one thing we had better let them have it." From the government standpoint the objectives in passing the law were (a) increased production, (b) improvement of home life, (c) development of the whole nation to the maximum extent possible.

Dr. Miller gave a very interesting account of the progress that is being made in the province of Ontario. He explained the system of administration and told of the large sums of money that are being put into new buildings for vocational education.

#### ADDRESSES AT THE ANNUAL BANQUET

The convention increased in interest, session by session, until it reached what might fairly be termed a brilliant climax in the three notable addresses on the evening of the annual banquet. Hon. Duncan Marshall, minister of agriculture for the Province of Alberta, led the trio with a remarkably poetical and entertaining address suggested by a recent visit to England and Scotland. He took his hearers thru rural England, picturing its natural beauty and its agricultural wealth. Then he took them to Scotland to the haunts of Burns and Scott and regaled them with the songs and romance of the hill country.

Following Mr. Marshall came Miss Ruth Mary Weeks, always popular in this Association, but never more charming or convincing in her argument than in her plea for the rights of minorities. Miss Weeks says we are intolerant in this

country; that we do not like people who disagree with us; that we live under a kind of tyranny of the majority. In times past we have been a nation of individuals; now we live in crowds, think in crowds. Today a strongly developed personality seems to be at a decided disadvantage; we do not relish the unusual. Personalities are therefore ironed down to a common level. After pointing to errors in politics and economics, the speaker made a telling application to education, centering attention on vocational education as still in the minority. Then she closed with the toast, "To every honest minority a hearing."

The last speaker of the evening was Dr. Charles A. Prosser. He began by telling one of his choicest darky stories. When the merriment had subsided he said, "This matter of vocational education has caused a great deal of inconvenience; it is a very disturbing thing." It is disturbing to the educator, to the employer, to the labor union, but we can be sure we will not be rid of it soon; we will have it all the rest of our lives because it is *right*.

Later in the address the speaker said that he does not believe there is going to be enough money in the school treasuries to pay the entire cost of part-time education. He believes that the employers should pay a part of the bill, but instruction should be given under the supervision of the school. He believes it is right to tax or force industry to pay for a part of such education. After discussing several of the unsolved problems of vocational education the speaker said that the essential thing is not where we are now, but where we are going. We can see only parts of the future struction of vocational education, but, quoting from Kipling, "After me cometh a builder."

No small part of the enjoyment of the evening was due to the gracious way in



which the president of the Association, Professor Edwin A. Lee, carried out his part of the program.

#### THE FEDERAL BOARD WORK DISCUSSED

At the final session on Saturday afternoon Uel Lamkin, director of the Federal Board for Vocational Education, spoke on what the Federal Board had made possible. He said that the Smith-Hughes law has made it possible to understand what a real education should be. It has taught boys not only how to live but how to make a living. And it has made it possible for the Federal Government to buy a share in the education of its citizens.

Miss Adelaide Steel Bayler made a plea for the Fess Bill which is intended to put home economics education on an equal basis with agricultural and industrial education under the Smith-Hughes Law.

L. H. Carris of the Federal Board spoke on the problem of industrial rehabilitation. He said that in this new work the control rests with the state boards for vocational education; the Federal Board is merely advisory. He pointed out, also, that the state money does not necessarily come from the state treasury. He looked upon the industrial rehabilitation as quite different from any work that is being done at the present time under the Federal Board. The "case method" must be used in such work; it will never be possible to train these men in groups. Another problem grows out of the fact that vocational rehabilitation must follow physical rehabilitation, yet none of the money provided under the law can be used for the latter. The speaker closed with the request that his hearers urge their state legislatures to accept the provisions of the industrial rehabilitation act.

The last speaker on the program of the convention was Dr. Prosser, who spoke on

"the issues of tomorrow" and seemed to take up the subject about where he left it the previous evening. He said that the vocational education of tomorrow must be democratic. It is not democratic today because (1) not any considerable number of people are getting it, and (2) not any considerable number of employments are represented in it. There is no occupation which should not be open at the bottom and for which an opportunity for up-grading should not be provided.

The speaker thinks we are chasing a will-of-the-wisp when we talk of all-day schools—trade, high or technical. He considered the great problem to be the training of men who have "donned their overalls"—the men who have already become workers. As a step toward the solution he wished we could get every worker to come to classes in industrial drawing, industrial mathematics and industrial science. If we could accomplish that, five years would revolutionize the life of any community.

One reason why nothing has been done to assist the workers in many industries is because we educators know nothing about them and because the workers in these industries know nothing of their own business technically. There must be study and research, getting the results down on paper, before real education can begin. Dr. Prosser believes that the pedagogs of the future have got to do a big job in the industries. Not only must they supervise much of this research, but the technical experts, he believes, cannot be trained in the public schools or in private schools. He says it must be done "on the job"

#### RESOLUTIONS ADOPTED

During the business meeting the Association unanimously adopted resolutions expressing appreciation of its fine treat-

ment in Minneapolis, and of the effective work done during the year by officers and committees; inviting business, civic, labor and employers' organizations to send representatives to its meetings; approving the Fess Bill which provides additional Federal funds for home economics education; pledging support to

the development of an adequate program of industrial education for girls and women; and encouraging instruction in thrift.

Invitations for holding the convention next year were received from Milwaukee and St. Louis. Duluth wants the Association to hold its meeting there in 1923.

## TOOLS OF THE SHOE SHOP

HARRY E. WOOD

Director of Manual Training, Indianapolis Public Schools

UP UNTIL a few years ago, when costs advanced by leaps and bounds, comparatively little attention was given to repairing shoes. Most all of the shoe repairing was done in one-man shops where the cobbler sat on his low stool by the side of a low table upon which was placed a set of hand cobbling tools. In front of him was the familiar iron stand with the iron last and around him on the floor a heterogeneous mass of shoes—men's, women's and children's, large and small, some with soles and heels almost gone, some over-run and burst out at the sides, some with vamps almost severed from the quarter, some ripped up the back, all fit subjects for the cobbler who as a rule was a master at his craft.

To look at the shoes in this pile one would think that their useful days were over for as a rule one seldom thought of sending shoes to be repaired until the soles were completely gone or other parts so worn out that they were unsightly. However, the row of shoes on the shelf with their straightened heels, their new soles, holes patched and rips sewed up, was evidence that even a seemingly worn out shoe in the hands of someone who understands it can be made to do still further duty.

The shoemaker's shop in the little room around the corner, with its wooden boot for a sign, has almost become extinct, and instead we find in the high rent districts of our cities and towns thoroly machine-equipped shops with a half dozen or more operators of machines doing their part toward the repairing of the shoes which are brought in. Instead of the wooden boot sign with "Shoemaker" painted upon it one sees in classy style in gold letter upon the plate glass window, information which tells that the room is occupied by the "Shoe Doctor," "Shoe Rebuilder," or "Shoe Repairer."

The output of such a shop compared with that of the old time shoemaker's shop is so great that it would almost seem fabulous to estimate it, but in this trade, as in many others, where machines almost human are used, production is greatly increased and if good operators are employed the results are more uniform and satisfactory.

There still is, however, and always will be, a place for hand shoe cobbling—in rural districts where it is inconvenient to take shoes a great distance to be repaired, in the thrifty home where some member of the household sees that a few of the leisure hours spent occasionally in repairing shoes returns profits, and in

the community where the number of shoes to be repaired is so small that it does not warrant the installation or expense of operating a machine-equipped shop. Recognizing this fact, many school systems thruout the country have made a place in their curricula for this type of work. Some schools have organized



LEARNING SHOE REPAIRING AT CHILDREN'S  
AID SOCIETY, NEW YORK CITY.

classes with from sixteen to twenty boys in a group, while in other schools shoe repairing is used more as a service to pupils whose shoes need attention. In the first-named type of school the work must be well organized and an equipment of sufficient size supplied to provide working facilities for all boys, while in the latter type of school only a simple hand equipment is needed.

Incorporation of such work in the schools may have several aims depending largely on the type of school. In one it may be that of service, keeping the feet

off the wet ground; in another it may be wholly a manual training project, the doing of a piece of work requiring thought and skill; in another it may be prevocational, giving pupils an insight into a rapidly growing line of business, or it may be vocational, qualifying one to enter the trade as a shoe repairer. If the aim be either of the first two mentioned, hand equipment and hand processes are all that are required, but if the aim is prevocational or vocational, certainly simple machinery should be installed and machine processes taught.

The accompanying list of equipment is that used in Indianapolis where all of the above types of classes are represented. Those items marked \* \* compose the individual equipment, those marked \* indicate tools which should be supplied at the rate of one to every four pupils, those items marked † indicates one of each to the shop is sufficient, and those items marked † † indicate equipment used in classes where the aim is prevocational or vocational, and where the equipment should approach as nearly as possible that of the commercial shop.

#### LIST OF EQUIPMENT

- \*\*Malleable, 24" iron stand
- \*Set of one each regular lasts A, B, C, D, for above stand
- \*Set of one each pointed toe lasts, A, B, C, D, for above stand
- \*\*Pair 6" Knell pincers
- \*\*Pair 6" Common pincers
- \*\*Pair 6" cutting nippers
- †Pair inside cutting nippers
- \*\*Nail claw
- \*\*Heel remover
- \*\*Plumb shoe hammer No. 2
- \*\*Curved-lip knife
- \*\*Square-point knife
- \*Sole leather skiver knife, 6" blade
- \*Scratch bone
- \*\*Two-side knife sharpener
- \*\*Simplex peg awl haft with doz. peg awls No. 3 and No. 4



- \*Stabbing awl haft with 1 doz. stabbing awls No. 107, No. 109, No. 2½
- \*Sewing awl haft with 1 doz. sewing awls No. 1, No. 4, No. 6, No. 8
- †Crispin tap iron
- \*\*Crispin 8" rasp
- ††Rexall ball and toe rasp
- †Nailset
- \*\*Steel buffer
- †Heel slicker, smooth, with shoulder
- †Kerosene heater
- †Saftro ink brush (or old tooth brush)
- †Genuine bristle shoe brush
- †Genuine bristle dauber
- †Belchers hold-fast shoe stretcher for men
- †Belchers hold-fast shoe stretchers for women
- †Belchers hold-fast shoe stretchers for misses
- †Belchers toe raisers for men
- †Belchers toe raisers for women
- †Revolving eyelet punch
- Heel nails  $\frac{6}{8}$ -14  $\frac{5}{8}$ -14  $\frac{8}{8}$ -14
- Wooden shoe pegs  $\frac{5}{8}$  stout
- Sandpaper No. 1½
- Bottles Red Diamond burnishing ink—black, tan
- Cakes heel ball—black, tan
- Oz beeswax
- Shoemakers wax—black (winter or summer)
- Barbours Irish flax No. 3
- Barbours machine thread No. 35 black
- Myer's silk finish machine thread E-20—black and tan
- Machine needles No. 4 and No. 5
- Needles Nos. 2, 5, 6
- Sheets tar felt
- Bottle leather cement
- Bottle rubber cement

MACHINES NECESSARY IF WORK IS TO BE DONE  
ON LARGE SCALE

(One only to the shop)

- ††Progressive trimmer
- ††American skiver
- ††Singer shoe patching machine, No. 294
- ††Progressive Star finisher equipped as follows:
  - Motor, 110 V, single phase, 60 cycle A. C.
  - Heel scouring roll, flat
  - Heel scouring roll, convex
  - 9" Bottom scouring roll
  - Progressive edge scourer
  - Heel breasting wheel
  - Dust system covering all scouring rolls
  - New high efficiency exhaust fan
  - Gray bristle brush
  - Black bristle brush
  - Heel burnishing roll
  - Bottom burnishing roll
  - Ever ready, edge, heel and shank setter
  - Ink pot and brush
  - Work shelf

SUPPLIES USED IN SHOE REPAIR SHOP

- White oak sole leather, for taps
- Belt ends for heels
- Clinch nails sizes  $\frac{5}{8}$   $\frac{4}{8}$   $\frac{4\frac{1}{2}}{8}$   $\frac{5}{8}$   $\frac{6}{8}$   $\frac{7}{8}$

In the city above referred to it is no uncommon sight to see a boy sitting in the manual training shop with one of his shoes on his foot and the other on the last and on the latter a piece of leather which is fast becoming a half sole or heel; or again to see an entire class sitting around a low bench, each boy intent on a particular piece of half-soling or heel-ing. In the Orphans' and Guardian's Homes, the idea of service and an insight into the work in a prevocational way is combined. A nine weeks report from one of these homes (180 minutes per week) shows that 42 boys of an average of twelve years and three months, did \$106.00 worth of work. The cost of material was \$30.00. This has meant a saving of \$76.00 to the institution and at the same time it has opened the eyes of the unfortunate children, who early in life must become self-supporting, to a profitable occupation. The evening schools have taken advantage of the shoe repairing equipment and men of mature years have entered classes with a purely vocational aim in mind.

*Unless all signs fail, the time is at hand when everyone, before finally entering upon his life work, whether at the end of his required schooling or at graduation, will have more self-knowledge, and when institutions that give diplomas will also study each individual more and be able to advise and guide him better into the career that promises the most for him.*—DR. G. STANLEY HALL

## TEA WAGON

DEAN M. SCHWEICKHARD,

Director, Department of Industrial Arts and Vocational Education,  
Public Schools, Clinton, Iowa.

AS A PROJECT this tea wagon does not differ essentially in principles of construction from any other piece of furniture. It does involve a few features, however, which have proved to be of especial value in the construction of this particular project, and may be applied to some other pieces as well. The details of construction follow:

### I. Frame work.

#### (a) *Legs.*

The legs are made of solid quarter-sawed oak  $1\frac{1}{4}$ " square, as indicated by the drawings. The front legs may be cut to length when made, but it is well to leave an extra inch or so on the lower end of the rear legs in order that they may be cut to the proper length to hold the top in a perfectly horizontal position, after the wheels are finished and the size of casters procurable is known.

#### (b) *Rails.*

It will be noticed that the upper and lower rails are of the same width, which at first may seem to be poor design. But the fact that the top is considerably below the level of the eye and projects well over the sides and ends, gives the top rails the appearance of being narrower than the lower ones, thus producing the balanced effect.

#### (c) *Joints.*

The tenons on the ends of the rails are not made to meet each other at the corners and mitered to prevent interference as is usually done, but are made to pass one above the other. Thus on the end of the rail which is  $\frac{3}{4}$ "x2" the tenon is made  $\frac{5}{8}$ "x $\frac{3}{4}$ " leaving a shoulder of  $\frac{1}{8}$ " at the side and a total shoulder surface of  $1\frac{1}{4}$ " at the edges. One of the two tenons which come together at any

one corner is made to extend from the lower edge of the rail  $\frac{3}{4}$ " up, and the other is made with its lower edge  $\frac{3}{4}$ " from the bottom of the rail and its upper edge  $\frac{1}{2}$ " from the top. The four side rails may well have the tenons cut at the lower edge and the end ones in the center position, all made  $\frac{7}{8}$ " in length. Care must be taken in cutting the mortises to make them correspond in position to the proper tenons.

#### (d) *Axle rail.*

A cross rail  $\frac{7}{8}$ "x $1\frac{1}{4}$ " is made to fasten across under the two lower rails with screws, upon which to secure the wheel axle.

### II. Handle and Brackets.

#### (a) *Handle.*

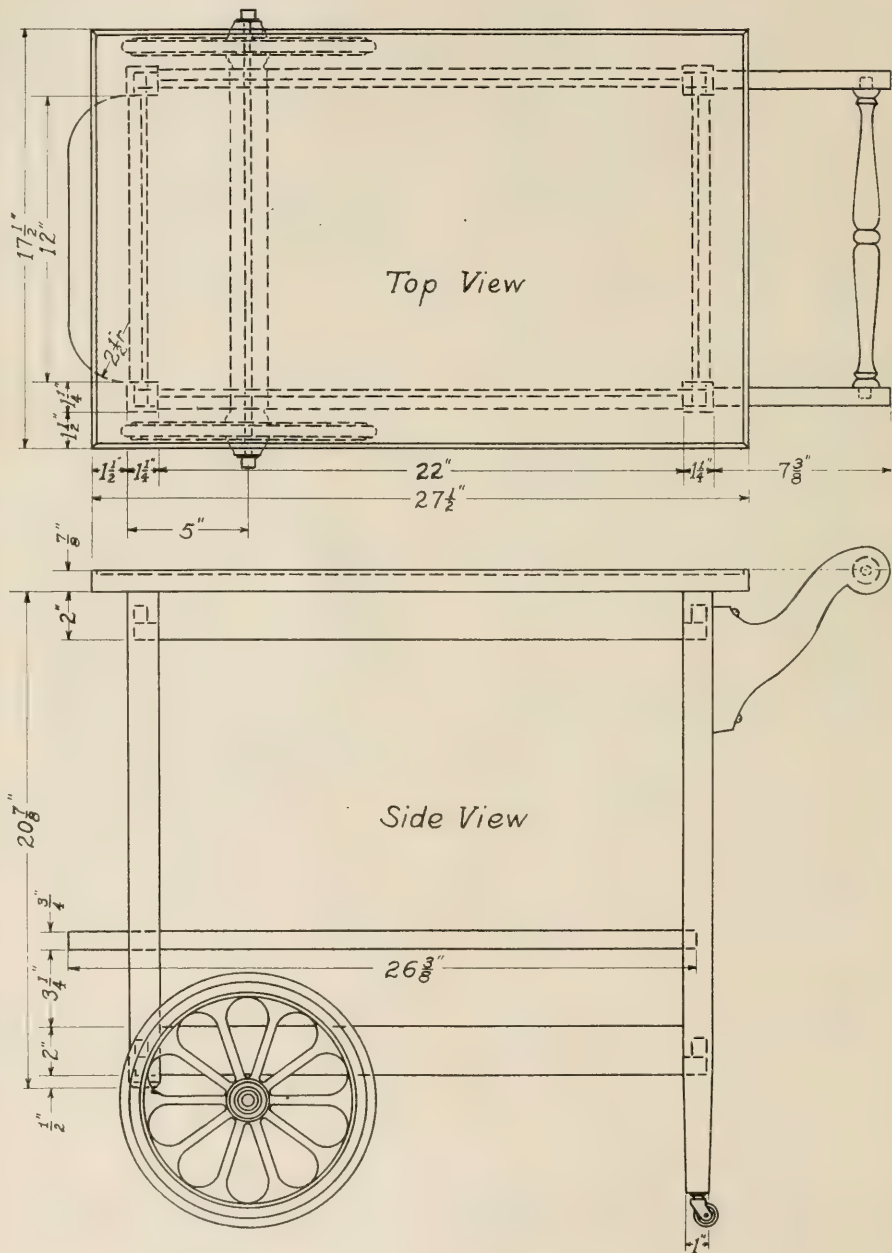
Turn as indicated by drawing.

#### (b) *Bracket.*

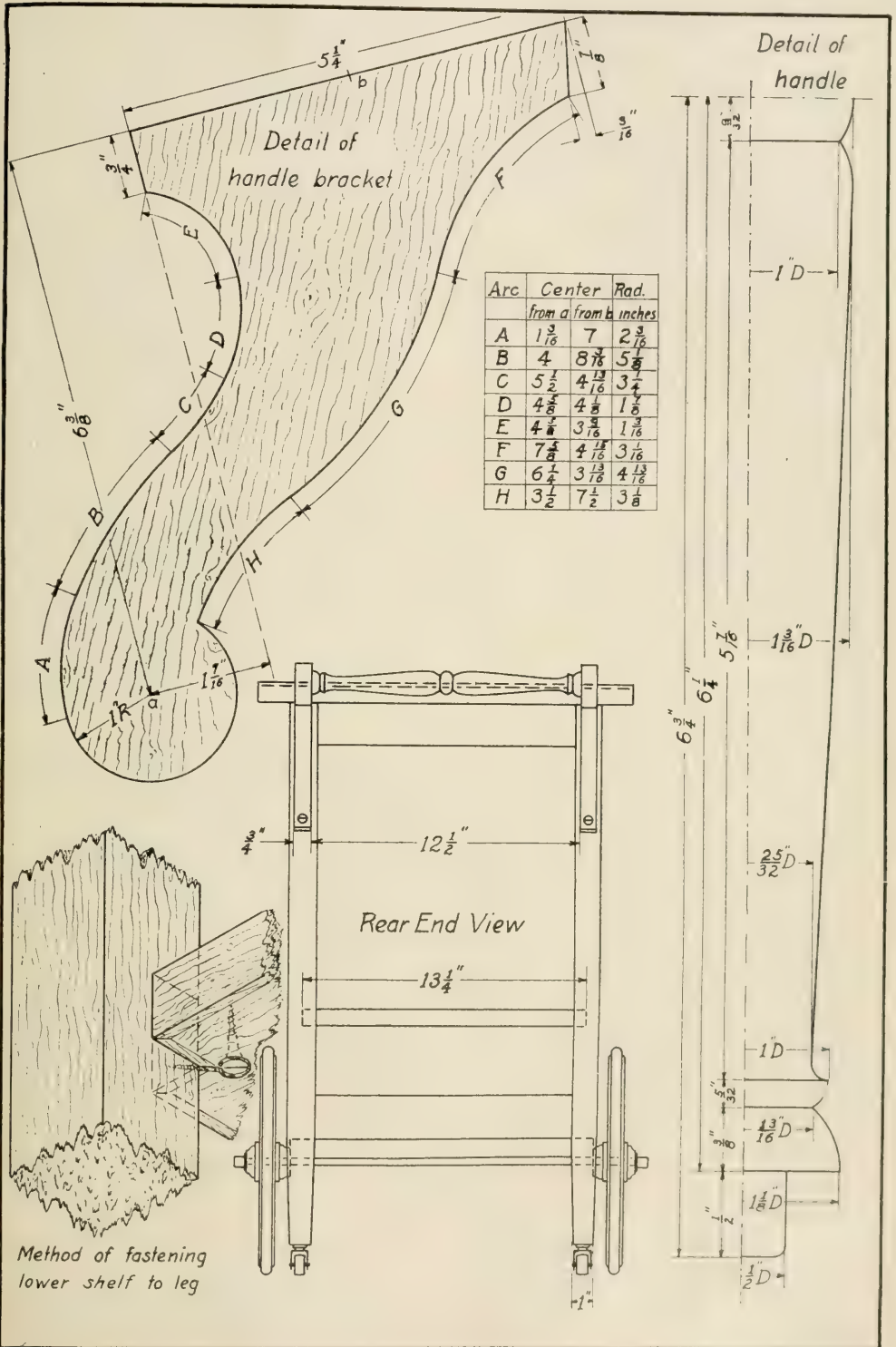
Make full size pattern from drawing and accompanying table as follows:

1. Draw line  $5\frac{3}{4}$ " long, locate center point "b."
2. At one extremity of this line and at right angles to it draw a line  $6\frac{3}{8}$ " long.
3. From the end of this second line, at right angles to it, and on the opposite side from the first line, draw a third line  $1\frac{7}{16}$ " in length, thus locating point "a."
4. With "a" as a center and 1" as a radius draw a circle.
5. With "a" as a center and  $1\frac{3}{16}$ " as a radius strike an arc.
6. With "b" as a center and 7" as a radius strike a second arc intersecting the first.
7. With the intersection of these two arcs as a center and  $2\frac{3}{16}$ " as a radius, draw arc A. If the  $2\frac{3}{16}$ " radius does not make arc A tangent to the 2" circle vary the radius slightly to make it so.
8. Proceed in like manner to draw arcs B, C, D, E, F, G, and H, making each tangent to its adjacent one even if the radius must be varied slightly.
9. Cut the pattern out of the cardboard or whatever it has been drawn on and lay it on the

# Tea Wagon







wood with the grain running about as shown in the drawing, locating the center of the 2" circle by sticking the point of the dividers or a scratch awl thru the pattern.

10. At the corner of this circle bore a  $\frac{1}{2}$ " hole  $\frac{1}{2}$ " deep to receive the dowel on the end of the handle. In boring holes in the two brackets take care to make them a pair by boring on opposite sides.
11. Cut out outline with band-saw or turning-saw and work to finished line.

### (c) Joints and fastenings.

1. Bore holes to fasten each bracket to leg with one 2" No. 10 flat-head screw thru the leg, let in half way and covered by a plug, and two  $1\frac{1}{2}$ " No. 8 round-head blue screws thru the bracket at top and bottom as indicated by the drawing.
2. Screw both brackets firmly in place, having handle clamped in place between them.
3. Remove screws from one bracket.
4. Glue handle joints.
5. Replace screw quickly.
6. Clamp brackets tightly to handle.

## III. Top and lower shelf.

### (a) Top.

1. Cut finished size from  $\frac{5}{16}$ " three-ply quartered oak veneer.
2. Glue any soft wood pieces  $\frac{7}{16}$ " thick and approximately 3" wide around the edge on the under surface, thus making the edge  $\frac{3}{4}$ " thick, and the same thickness extending in for 3" or so.
3. Finish down to  $\frac{3}{8}$ " less than finished dimensions for length and width.
4. Prepare enough oak strips  $\frac{3}{16}$ " x 1" to go completely around top and lower shelf, using lengths which will work in economically.
5. Glue two of these strips to the sides of the top, letting them extend well over the ends, and not more than  $\frac{1}{16}$ " below the lower surface, using at least three clamps under which are good straight 1" pieces.
6. When glue is thoroly dry, remove clamps and plane down lower edge flush with under surface.
7. From the finished lower edge, gage a width of  $\frac{7}{8}$ " and plane to line.
8. With back-saw cut ends at 45° angle out from corners.
9. Proceed in like manner with end strips except that they must be cut to exact length and made to fit the miter on the side strips before being glued on.

10. Round the top corners of these strips slightly with plane and chisel.
11. Finish the rounding process by boring a  $\frac{1}{4}$ " hole lengthwise thru a small block, splitting or sawing it along the center line of the hole, and using this as a form over sandpaper on top of the strip.
12. Fasten the top on in the same way as any table top.

### (b) Lower shelf.

1. Follow same method as for top except that strip around edge is made flush on both top and bottom.
2. The strip around the curved portion at the front must be soaked in hot water and bent before gluing on. A form for this purpose may easily be made from a 1" board sawed in two pieces on a line traced around the curved end of the shelf.
3. The side strips may be simply butted against the legs but it is recommended that short strips be mitered and fitted into the notches cut out of the corners of the shelf, as this will present a more workmanlike appearance. The notches will of course need to be cut accordingly.
4. The lower shelf is secured in position as shown in the detail by screwing a screw-eye into the corner of the leg and putting a screw thru it into the shelf.

IV. Wheels. (Directions are given for one wheel but the two should be carried along together.)

### (a) Rims.

Cut 20 pieces  $3\frac{1}{2}$ " long,  $\frac{7}{8}$ " wide and  $\frac{3}{16}$ " thick having edges curved to conform to circles of  $4\frac{1}{4}$ " radius and  $5\frac{1}{8}$ " radius respectively.

### (b) Spokes.

Cut 10 pieces  $\frac{3}{8}$ " thick in the form of an isosceles triangle whose altitude is  $5\frac{1}{8}$ " and whose vertex angle is 36°, with grain of wood running along the line of the altitude.

### (c) Hubs.

Cut 2 blocks  $1\frac{1}{2}$ " square and  $\frac{7}{8}$ " thick.

### (d) Construction.

1. Screw a pine block 2" thick and 11" in diameter to a lathe face-plate.
2. Face off on the lathe and glue paper to surface.
3. On the lathe locate center and strike off circles of  $4\frac{1}{4}$ " radius and  $5\frac{1}{8}$ " radius respectively.





4. Divide the circumference of one of these circles into 10 equal parts, and draw the radii thru both circles.
5. Select 10 of the thin segments which match well in grain, and placing one at a time between the two circumference lines, fit their ends perfectly together along the radial lines and clamp each in place with a wooden clamp as fitted.
6. Remove one at a time and glue in place, tapping gently into place with hammer or mallet and clamping securely.
7. Face off on lathe, and mark the circumference of any circle on surface thus faced off.
8. Divide this circumference into ten equal parts beginning at the central point of one of the thin segments, and draw radial lines thru these points.
9. Pound a 1" brad thru a small piece of the  $\frac{3}{16}$ " material letting the point protrude about  $\frac{1}{4}$ ".
10. Place the brad point at the center of the circle and pound it down until the small block rests upon the surface.
11. Select 10 of the triangular pieces whose grain match well and snip the points of them very slightly with a chisel.
12. Fit these pieces carefully along the second set of radial lines drawn and clamp in place with points butting against the brad.
13. Unclamp one at a time and glue to thin segments and to each other, and reclamp firmly.
14. When thoroly dry remove clamps, remove brad, and face off on lathe, marking in the same two circles as at first ( $4\frac{1}{4}$ " and  $5\frac{3}{8}$ " radii), and in addition one of  $\frac{3}{4}$ " radius.
15. Proceed to fit and glue second ring of thin segment by same steps as first ring.
16. Glue one of the  $1\frac{1}{2}$ " square blocks at the center making the four sides roughly tangent to the  $1\frac{1}{2}$ " circle.
17. Turn down hub, surface and edge of wheel as indicated in detail of wheel, marking circumference carefully on face block.
18. Insert the edge of a chisel between wheel and face block in several places, tapping it lightly, and the paper will split, allowing the wheel to be removed.
19. Glue on second hub block with grain crossing that of the first one.
20. Cut a recess in the surface block to receive the finished side of the wheel, place wheel in it and finish second side, also cutting axle hole at center.
21. The lines where the spoke segments come together should now be plainly visible only by the change in the direction of the grain, and used as the center lines of the large and small holes to be bored as indicated in the detail.  
If the work has been done accurately according to directions the boring of these holes will leave  $\frac{3}{8}$ " between them. They should be tested out first with dividers and if any inaccuracy is discovered the position or size of holes should be shifted accordingly.
22. Bore the holes, reversing the wheel and cutting from both sides.
23. Draw the tangents. By using a strip  $\frac{3}{8}$ " wide which will fit in between the hub and the rim, the tangents may be drawn each side of it and the spokes thus made uniform.
24. Saw along the line of these tangents and smooth up the surfaces with chisel, file and sandpaper.

(e) *Axle.*

A  $\frac{3}{8}$ " rod or  $\frac{1}{4}$ " gas pipe may be used as an axle, and fastened to the axle rail by means of screws thru drilled holes or by metal stirrups.

(f) *Tires.*

The groove in the edge is designed to fit a  $\frac{1}{2}$ " rubber tire. This may be secured and fitted at any local furniture store equipped to re-tire baby carriage or tri-cycle wheels.

It is assumed that the worker will finish the whole carefully with sandpaper and then apply some good permanent preservative finish. A good paste filler, shellac and wax is recommended. A tray may be added if desired.

*Permanent and settled industrial peace and good-will can only be found in a full and unreserved cooperation between Capital and Labor, with some scheme of joint control and profit-sharing involving more knowledge by the laborer of the business as a whole and more loyalty to it.*

—DR. G. STANLEY HALL.

# CHANGES IN THE TEACHING OF MECHANICAL DRAWING

W. F. WILLARD

Instructor in Mechanical Drawing, Carl Schurz High School, Chicago

THERE have been so many changes affecting the teaching of mechanical drawing, during the past ten years, that the enumeration of some of them may be worthy of the space allotted to this article. In fact, as we all know, technical education in general has undergone many changes and has taken a wonderful stride toward the foreground of educational thought. Coincident with the rise of the industrial movement in education, there has come, naturally, many alterations and changes in technical courses. Mechanical drawing was a subject of instruction in technical courses before shopwork developed in American technical schools but it did not become a very important factor until the manual training movement became general. It is interesting to note some of the changes that have affected the courses in mechanical drawing:

(a) A few years ago we began a course in mechanical drawing with numerous instrumental exercises using geometric constructions as a basis in acquiring technic. Skill was considered of as much primary importance as the A, B, C's. We do this no longer.

(b) We formerly insisted upon the application of ink to every problem. Contact with large drafting concerns convinced us that we were wasting time in not stressing sufficiently the pencilled drawing.

(c) Colored inks, which once were used to make ornamental drawings have been eliminated.

(d) Simplified freehand Gothic lettering has supplanted various ornamental types. A prerequisite to an acceptable drawing in every drafting room is neat, well executed lettering.

(e) Orthographic projection at one time was largely presented by copying exercises from a text. Direct connection between the mental picture, as expressed in shop language, with the object itself, was thus lost. The up-to-date instructor presents the "object" and requires the drawing in proper conventional form.

Such an evolution must naturally come from within the consciousness and teaching experience of the teacher. An outward expression of growth is a teacher's adaptability to conditions.

(f) There are texts and texts! And there is value in most of them. But each outlives its usefulness in a brief time and must be revised to meet newer conditions. The present tendency seems to be to elaborate upon the loose-leaf plan of presenting a drawing course, in order to facilitate the addition, or subtraction, of material from time to time, or as class conditions require.

(g) Monthly examinations or tests may be good pedagogy in academic subjects, but when a drawing is presented and it passes the teacher's test of acceptability, a written examination would seem to be superfluous.

(h) Mechanical drawing formerly was presented as an isolated or unrelated subject. Exercises were provided with a view to securing technic only. The installation of shops provided the needed terminal by which problems that developed within the experience of the class would first be referred to the drawing department, thought out on paper, and then referred to the shops. The Coordination of shop and drawing room should be an essential factor of every well organized department. Cooperation will reduce teaching difficulties materially.

(i) We hear much these days of standardization. All business life seems to have been imbued with the idea that its physical operations must be systematized to the finest economical point. It has made itself felt in the drawing department. Drawing courses have been duplicated between the senior high and engineering schools to the detriment of the student. Because of this and conditions which have already been enumerated, courses (in the Chicago High Schools) have been reorganized with a view to economy and efficiency. The subjects in the several technical courses now have a broader and more relative value to the general direction and purpose of the student's ambition.

In a large system of education, efficiency is served best by the adoption of a uniform program so that transfers from one school to another will not retard or hinder the progress of the student.

To illustrate the force of some of the above statements it may be well to append a synopsis of the course in mechanical drawing now in effect in our city schools and compare it with one in effect in 1910.

#### *First Year (1920)*

Lettering and cover design—4 plates. Working drawings from simple geometric objects—2 plates. Working drawings without dimensions—2 plates. Working drawings from isometric illustrations—2 plates. Geometric constructions and applications—2 plates. Orthographic projections (revolutions)—2 plates. Sections, conic, and shop objects—2 plates. 20 plates in all—40 weeks—45 minutes daily recitation.

#### *Second Year*

First half devoted to principles of development and penetration applied to sheet metal exercises—10 plates. Second half devoted to elementary machine (5 plates) or architectural (5 plates) with freehand sketching of selected problems from the shops.

#### *Third Year*

Continuation of last half of second year with emphasis laid upon the detail drawing, tracing, assembly, and blue printing. Notes, tables, data, catalogues etc.

#### *Fourth Year*

(a) Major problem, gas engine, marine or auto; motorcycle engine; piping layout; structural problems; gears and cams; transmission machinery, pumps, etc., involving construction and simple design with a comprehensive requirement of machine drawing details.

(b) Architectural drafting and design. Formal lettering. Brick and masonry construction, plumbing interior and exterior details. Isometric. Plans, elevations, floors, details of residence. Perspective, shadows, orders.

#### *First Year (1910)*

Constructions in plane geometry—4 plates. Working drawings and working sketches—7 plates. Elementary orthographic projections; third angle method, class instruction. Scales, lettering, and figures. Different alphabets.

#### *Second Year*

Orthographic projection—8 plates. Evolutions, developments, sections, working drawings, tinting, lettering, representative drawing, perspective.

#### *Third Year*

Orthographic projection—8 plates. Penetrations with developments. Isometric and cabinet projections, tinting, lettering, design.

#### *Fourth Year*

Choice of 3 courses.

(a) Advance forms of projection: Shadow or oblique projection. Conic projections, perspective, tinting, lettering.

(b) Machine drawing. (Selected Problems.)

(c) Architectural drawing.

This covers in a general way the four year requirements of drawing. Comparing the present course with that of ten years ago there is a very marked advance in material selected and methods employed in teaching. Many non-essential elements have been weeded out. Newer projects of modern interest are available. Equipments are practically complete for conducting classes either in architecture or machine drafting. The lantern and screen make lectures upon steel and architecture a desirable feature. Blue print machines in the drafting room are also necessary.

All these changes mark a positive step of advancement. Education seems to be moving rapidly forward, away from fads and theorists. And now that our aims



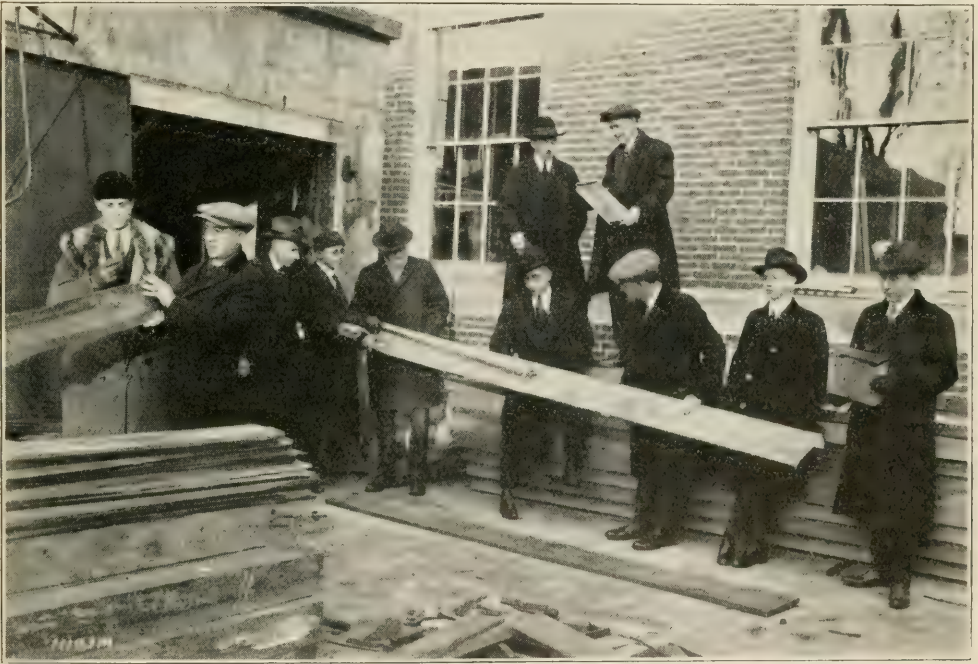
appear to be definite and constructive we should look forward to a wonderful era of achievement.

In conclusion I wish to quote from a recent editorial writer who expresses the business point of view:—

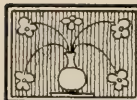
The average practical business man looks upon art and drawing in his boy's and girl's life as a "frill," and he often wonders why educators don't get down to the practical things in his child's education. But, is drawing so unpractical? Where does a man's house come from if not from a drawing? How would his clothes come into being if it were not from a pattern? His cigar has to be made by

a machine made from a drawing. The furniture in his house has to be made from drawings. How would he ever have had a desk in his office if it were not for a drawing? Or a chair, or a pen, or a telephone, or his inkstand, or—well, let him name anything he likes in his office—except himself—and in every case he comes back to a drawing. The building in which he has his office; the trolley in which he rides, or his automobile, or the railroad car—each came from a drawing. Isn't it that we just don't understand or haven't thought about it, that we are apt to think of art or of drawing as a "frill?" And yet in our public schools, what time is given to "drawings, art and all that sort of thing!" But what is more fundamental?

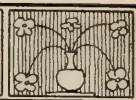
—LADIES' HOME JOURNAL.



STUDYING LUMBER AT THE FOREST PRODUCTS LABORATORY, MADISON, WIS.



## EDITORIAL REVIEW FOR THE MONTH



### EDUCATIONAL FILMS IN THE FUTURE

IT IS worth while occasionally to think of ourselves as standing on a hill and looking, first, backward over the past and then forward into the future. A comparison of the achievements of the past with the hopes and aspirations of the future is likely to give one courage to go forward with clearer vision and with confidence. At least it gives him an objective toward which he may think he is travelling, however much he may be diverted by circumstances as the days come and go.

On such a hill were the editors of the *Scientific American* when they prepared their seventy-fifth anniversary number published in October and on such a hill was E. G. Lutz when he wrote his recent book on *Animated Cartoons* published by Scribner's. Those of us who are always looking for new light on methods of teaching technical processes and trying to eliminate defective technic from instruction in schools for vocational education will feel like standing at attention when they read the following which is quoted from Mr. Lutz's book:

There is a natural curiosity in nearly every one to want to know about methods in art. And the interest is general in watching a craftsman create an object of art, or an artist bring into graphic being some imagery of his brain. It would not be out of place for these reasons, as well as a matter of instruction, to produce films showing art methods.

Especially for elementary pupils would it be a desirable thing to show the way of making simple freehand drawings. Then, instead of an instructor repeating the process—sometimes with indifferent interest or enthusiasm—it can be arranged that someone skilled in drawing, and when he is feeling at his best, go thru the procedure under the motion-picture camera. The result could be multiplied a number of times and shown in many classrooms with an evenness of performance not possible when some one does it day in and day out.

Methods and principles of the more advanced

branches of art instruction—pictorial composition, for instance, could be taught, too.

As one example, we will suppose that the purpose is to show what good pictorial composition is. First, an indifferent picture, poorly arranged, is shown; the various components appear on the screen exactly as they would in making pictures on canvas or paper; then little things pointed out that are lacking in artistic merit, or an explanation given of any detail that is not quite clear. (For this purpose a drawing of a pointer is made on cardboard and cut out in silhouette. It is moved around precisely as if it were a real pointer.) After showing the faulty construction the various components can be moved again, but into places to form the well-composed picture.

Methods of designing in the crafts could be demonstrated by animated drawings; and they could also be employed to explain visually the story or history of design. Ornament can be shown as it evolves from its natural form, to the first rudimentary basic type; then it passes into the best classical style, after which it becomes, as in all art evolution, the merely decorative. And it can be shown, as is usually the case in the history of an ornamental form, terminating in a debased and meaningless figure or scroll. All these screen pictures could be so managed that the pictures go thru their mutations before the eyes as if they were living things.

Presuming that in acquiring of knowledge all brains function in the same or a similar way, what could be better as a means of instruction than a film of some educational subject?

The art of the animated cartoon and the educational screen drawing has as yet not been developed to its highest point. It needs, for one thing, color. Such films are only shown, at present, in monochrome or simple outlines. Of course, colored cartoons will come. Effecting the tinting by hand would be easy as a process, but very tedious and costly. A practical way of coloring the ordinary photographic film is now in use by tinting them by the aid of stencils. Both the stencil-cutting and the coloring are accomplished by the help of machinery.

At present there are color processes that produce very beautiful photographs on the screen; but they do not show, at least in those that so far have come under the observation of the author, all colors of nature. The craft is awaiting the inspired inventor who will produce motion-pictures in colors that will exhibit nature's full range of hues and shades. Then in comparison with Niepce's simple process,



of about 1824, of fixing a lens-formed image upon a metal plate coated with bitumen, the photographic art will have attained to a marvellous degree of technical development.

A consummate color process should reproduce, too, an artist's work upon the canvas without losing any variations of hue that he has set forth. Then it will be possible to have animated paintings. One will go, when that wonder has been achieved, to an exhibition gallery to see art works with the additional interest of movement as well as those of color and individual interpretation. And, too, our museums will have projecting rooms and fire-proof libraries for keeping films.

It seems like fantastic dreaming to hold such notions; but many things that were once considered purely visionary have now become commonplaces.

#### IS IT DESIRABLE TO PAY PUPILS A WAGE?

THE above question was asked not long ago by a school superintendent who was puzzled over some of the situations that were arising in his city on account of the new impulse toward "productive work" and "community service."

Without attempting to give our complete answer to the superintendent's question we will summarize the answer:—

If pupils are paid for work done in school they must not be paid more than they really earn. Otherwise a false standard of the value of their labor is created. How to determine what they earn is a real problem. In the case of piece work the value of the labor can probably be determined by comparison with similar work done in factories, but it is not giving the student the correct estimate of the value of his labor to pay him the equivalent of the retail selling price of the object produced. If the retailer and the wholesaler are both eliminated and "direct-from-maker-to-user" method of disposing of wares is adopted, there is still some overhead expense that must be taken into consideration. Teachers do both the pupil and the public an injustice when the pupil is allowed to use a public school equipment as a means of private

gain. It may be argued that the amount is so small that it is not worth considering. Perhaps it is, but the principle involved is a big one and one that needs emphasis in these times of blind irresponsibility among too many public officials, including teachers. Moreover, the figuring out of the value of the labor item is an exceptionally valuable problem in arithmetic for the pupil who does the work.

If students are paid on the basis of time consumed in labor the problem is a more difficult one, if done in an educative way. It is not sufficient to say that if a man gets \$1.00 an hour a boy should get 50 cents, in the same kind of work. From the standpoint of justice, which should be the only one tolerated in paying students, the boy might be worth as much as the man or he might be worth less than nothing. He might even do a damage to the job. Any time system of payment, then, in order to approach justice must be based on established standards of efficiency. Obviously the teacher must be a large factor in establishing these standards, tho the students may make most of the necessary calculations.

If the teacher is an inefficient foreman the school board or other employer cannot afford to pay the same scale of wages to a given group of boys that could be paid to the same group under a more efficient foreman. This suggests that in order to be safe in determining a wage scale, a different scale must be worked out for each school and perhaps for each job, or teachers must be standardized with reference to foremanship. As there is no such standardization of teachers, and probably ought not to be, the safe way is to check up any system of payment by getting the cost of the labor items for the job as it would be if it were done by duly qualified mechanics.

Referring back to the original question, "Is it desirable to pay pupils a wage?"



we may say that it would seem to be unfortunate if public school pupils, especially in the grammar grades, were to be paid for all their work—to be constantly thinking how much money they could get from the things they make. It would seem to be unfortunate to deprive children of the opportunity to feel the satisfaction of having contributed gratuitously to some school or community enterprise that was worth while and in which they were thoroly interested.

#### SCHOOL FUNDS IN CALIFORNIA

ON November 2nd the voters of California by a majority of more than 200,000 passed a constitutional amendment containing some of the most forward looking educational provisions ever voted into a state constitution.

The amendment as adopted provides that hereafter the state shall contribute out of its treasury toward the support of the public schools an amount which shall be not less than \$30 per pupil per year in average daily attendance in the elementary and high schools, and that the counties must raise in addition at least \$30 per pupil in average daily attendance in the elementary schools and at least \$60 per pupil in average daily attendance in the high schools.

The amendment also provides that all of the school moneys contributed by the state, and 60 per cent of the school moneys raised by the county, must be used for the payment of teachers' salaries. With the moneys provided by this amendment California will be able to establish a state-wide minimum salary of fully \$1,300 a year.

The amendment was proposed and campaigned for vigorously by the California Teachers' Association. The campaign was under the direction of a committee of the Association. The Association carried the fight for the amendment

into every city, town and school district in the state. A "Primer of Education and School Finance" was printed in the *Sierra Educational News*, the official organ of the Association. This Primer was then issued in pamphlet form for the use of the campaign workers thruout the state. Nearly two million campaign cards with the slogan, "A Square Deal for Every Child," were systematically distributed among the voters. Hundreds of "Amendment Sixteen" meetings were held. Thousands of automobiles carried the "Amendment Sixteen" appeal.

The teachers secured most generous support from the press. Thru moneys raised by teachers, display ads, giving all the facts, were run in the principal newspapers thruout the state. The movies took a prominent part in the campaign. Many clubs and fraternal orders co-operated in the campaign of education. The school forces of California acted as a unit. The entire cost of the campaign was borne thru contributions made by superintendents, principals and teachers.

Concerning this new law the state superintendent of public instruction, Will C. Wood says,

It establishes, definitely, in the constitution the terms under which state, county and school district become partners in the support of the public schools.

It fixes the annual state contribution for elementary schools at \$30 per pupil which is an increase of approximately 50 per cent. It also makes it impossible to reduce this amount except by vote of the people.

It fixes the annual state contribution for high school purposes at \$30 per pupil which is an increase of 100 per cent.

It applies the principle that money for school purposes should be raised by taxes levied according to ability to pay, and that funds thus raised should be distributed to school districts according to the needs of the children to be educated.

It will reopen the hundreds of schools now closed for lack of teachers because of inadequate salaries.

It will encourage young people to enter our normal schools to prepare for teaching.

It will equalize educational opportunities in California.



E. A. WREIDT

#### E. A. WREIDT GOES TO INDIANA

AS previously announced in our Field Notes department, E. A. Wreidt has left the state supervisorship of industrial education in Illinois and gone to Indiana where he has become the state supervisor of vocational education. Mr. Wreidt was the assistant director of the State Department of Registration and Education in Illinois from July 1, 1917 to July 1, 1919. When the office of state supervisor of industrial education was created, January 1, 1918, Mr. Wreidt was transferred for a part of his time to

the new office. After July 1, 1919, all of his time was required in the new position, and during the past year he has had an assistant.

Previous to this state position Mr. Wreidt was for three years a city superintendent of public schools, and at another time had valuable experience as paid secretary of the Committees on Vocational Training and Educational Research of the City Club of Chicago. In this capacity he prepared an extensive report on vocational training in Chicago and twenty-seven other cities, also a report on a proposed bureau of educational research. This latter report was the result of an investigation of the Chicago school records and practices, and was made at the request of the Chicago school authorities. The research bureau now in operation in that city is the result, in part, of the recommendations of this report.

Mr. Wreidt is a graduate of the University of Chicago where he received his A. B. degree. Since then he has done three years of graduate work in Education and Psychology at the same institution, holding a fellowship in education for a part of that time. In future years Mr. Wreidt will be able to take satisfaction in the fact that he has been a very important factor in laying foundations and giving a safe start to industrial education under the Smith-Hughes law in the State of Illinois.

*All of us adults do our best work under the impulsion of a life-career motive.*—DR. CHARLES W. ELIOT.

## A POINT OF VIEW

### AN EDUCATOR'S IMPRESSION OF CALIFORNIA

THEY say that "you can *tell* a Bostonian anywhere, but that you cannot tell him much." However that may be in theory it was the fact that I saw things on my recent trip to Southern California which proved that, one Easterner, at least, can be told and shown much to his advantage. The purpose of the trip was that of addressing a California Teachers Convention and a Los Angeles County Institute. They certainly do things right. Efficiency and cordiality are their watchwords. The guest is met at the train, personally conducted to the hotel, ordered to bathe and rest, met the next morning and escorted to the meeting. He makes his speech, hustles to another meeting where he repeats it, dines, is conveyed by auto to another meeting, speaks, is whisked to another, and goes to bed. Next day he speaks in Pasadena, and is "breaking the speed limit" to Riverside (I do not know how many miles, but enough for an Easterner ordinarily to make a days trip of it), for an afternoon speech, and then in the evening land at some "San" or other for a finishing touch to a fair day's work. This goes on for three days and then the last two days all teachers of the county flock to the centre for the big meetings. One may use the same speech in the outside communities but he will have to have a new one when all come together.

It is a privilege to go. Perhaps some day we Easterners will bid for the privilege, and opportunities to see and visit with the school folks of Southern California will be auctioneered off to highest bidders. Of course the climate is attractive and roses, oranges, and open cars offer a marked contrast to the Royal Gorge ride on the D. & R. G. Railroad where at an altitude of 10,250 feet the snow laid three feet deep. But I need

not sing the praises of California. The natives have that down to perfection. They have "Sunkist" the oranges and Blarney stoned their climate. I would not say anything against the place if I could and I could not if I would. Let me speak about it educationally rather than climatically.

It has the best chance in America for educational work. It is rich, new, out-of-doorish and cosmopolitan. Most communities in the East are made up of people who have to stay there—stay-inners. Southern California is composed of "get-outers"—those who went there to make money, to spend money, to venture again, to live on what they have, and a few to live on what others have. They come from everywhere—Iowa farmers, Texas rangers, New York financiers, Philadelphia lawyers, and all. My first playmate was there to greet me. My last friends were there to speed me on the way. Cosmopolitan people result in cosmopolitan ideas. The "little red school-house" was not mentioned once. The playground movement of Boston, the civic centre idea of Cleveland, the open air schools of St. Louis, the part-time schools of Cincinnati, the agricultural schools of Michigan—all and others—were there because Boston, Cleveland, St. Louis, etc., etc., people are in Los Angeles and vicinity. People always take away the best, you know, and leave the worst. So in Southern California you find only the best. Ten acre plots for school buildings, out-of-door gymnasiums, swimming pools, ample shops, school plays, moving pictures in schools, delicately tinted walls, agricultural teaching in city schools, organized play and recreation, community use of school houses, etc., etc.

The buildings are beautiful. They



run out rather than run up. They are light and the children look "sunkist." The pupils work and play out-of-doors as becomes such a climate. They build things in the shops without worrying about "shop production." They have cosmopolitan high schools in fact as well as in name. A trade school boy can not only sing the Star Spangled Banner with the Latin scholar but each can fit himself to go his vocational road. They gave birth, thru Superintendent Frances of Los Angeles, to the junior high school. Their agriculture can be twelve months in the year; their school system 24 hours a day.

I did not meet all the men and see all the schools. Dr. Snyder, state director of vocational education, was there in all his cosmopolitanness. There is no Eastern debatable issuedness about him. His program is (1) varied industrial activities for twelve to fifteen, (2) part-time instruction for sixteen to eighteen, and (3) adult education of any sort for anyone at any time. His vocational training theory apparently is based upon the idea that he is willing to try anything once and to try it in practice rather than on paper. I suspect he makes his rules and regulations after he has raised a few vocational orphans. He has an Edisonian way of going at things.

Professor Robert J. Leonard of University of California, Teachers College, State of Indiana, Federal Board of Vocational Education, and back again to California was there. A college professor without field experience is like a fish which learned swimming by a correspondence course. Leonard is not that sort. He has a national grasp of the Vocational Education movement. His teacher training work at the University of California is bound to be successful, not only because he is the head of it but because the state itself is able to absorb his product in its

varied and extensive program. His philosophy is sound and his methods superior.

Then there was Dr. Wilson of the Manual Arts High School. To see the school plant was like inspecting a University. It is a University of Young People. They do about everything in wholesale fashion. Their limit seems to be the sky. What some of us say cannot be done he is doing. It takes a real man for a man's job and the job of running a cosmopolitan high school in a *cosmopolitan way* requires a man. He is that man.

Another Wilson—Stanley Wilson—member of the State Board of Education, one time a ranch man, then preacher with a vision, now running a large printing establishment, is "a real educator." Physically a cattle ranger, mentally a scholar and spiritually a leader, he interprets children to mean opportunity for growth and expression, vocational training to mean equal chance, and adult education to mean bettering one's condition in life. I don't know how many degrees he holds. I imagine that the colors of his college are black and blue in the University of Hard Knocks.

Kienholz, supervisor of vocational education, has a wonderful opportunity. There are the trade departments of the high schools, the industrial arts of the Junior High School, the agriculture of all schools to manage in a city that in ten years will have a million of citizens present and to be. He has the chance to make and not to remodel—to visualize and not to reminisce.

Corcoran, an old New York state boy, is the assistant supervisor. He knew theoretical agriculture and manual arts before coming to California. He has turned book theory of plant science to practical science for the schools and for his own profit. He talked about—and—

and—with reference to California agriculture in terms which a New Englander whose knowledge of agriculture was gained by planting seed in the spaces between the rocks and where the only ploughing was done with a spade can not even repeat, much less understand.

Everywhere regret was expressed that Professor John Brewer—Life Career Brewer—had left California to return to Harvard. His work so well begun needs a man to build upon the foundation he laid. His nearest successor promises to be a woman, Miss Helen Watson, who is in charge of developing the vocational activities for exposure purposes in junior high schools. It's a big job and will take the resourcefulness of her superior, also a woman, Mrs. Dorsey, superintendent of Los Angeles schools. "Where there's a will there's a way" will prove true in this case.

I visited Leland Stanford which they say has the faculty, and University of California which they say has the students. I left the Los Angeles harbor, which only lacks ships and a place to put them, to go to San Francisco, which has both harbor and ships. Here I saw the "Bay District" with Superintendent Hunter of Oakland and Superintendent H. B. Wilson of Berkley. Here they build polytechnic high schools which look like coliseums and junior high schools every minute or so. They do school business on a mail order basis, and with all the consequent freedom.

The Whittier Schools for "bad boys," I had heard much about, and the ideas of its superintendent, Fred Nelles, with reference to a 24-hour a day school. Here was a real reform school that was reforming largely thru the sincerity of purpose of its superintendent. He wants, however, to get the boy fruit before it is decayed by spraying the blossom before the delinquency bug stings it. Hence his

idea of having the school people give him boys who show traces of delinquency and without the stigma of "sentence" by court to spray them with education, vocational training, health, citizenship, morals in his new school.

San Quentin, the state prison of California, was another objective. I had expected great things and I was not disappointed. Wonderfully situated with every opportunity for out-of-door work in gardening, field crops, dairying, and recreation it was giving moral deviates another chance to learn how to make good. The warden was unusual in that he knew, not only, practical penology but also theoretical psychiatry and psychology. The men were usefully employed at work profitable to the state and to themselves. The medical, dental, and educational service was unusual. The educational work is linked up by correspondence courses with the University of California and men in their cells at night are in touch with the outside world of agriculture and industry.

California is the home of cafeterias. Everywhere one sees the sign. To my mind the state, at least in the southern part, has the best opportunity of developing educational cafeteria service—anything, any time, anyone. They most assuredly have everything for everybody. Educational food is displayed in beautiful buildings and with exceptional equipment—cut flowers, literal and figurative, soup, salads, meats, entrees, ice cream and liquids are present galore.

*But*, and you know that somewhere in this article there would be a "*but*" or else it would not be Eastern, there is need, as I saw it, of some educational dietitians like John Brewer to assist pupils in making educational selections from such a cosmopolitan feast as Southern California presents. The Eastern special high-school may be too definite, the Southern Cali-

ifornia High School is perhaps too indefinite. California educational raisins, plums, peaches, figs, apricots, oranges may make a wonderfully rich educational pudding, but they may result in educational indigestion. The bread puddings of the Eastern schools may be too much on the bread-and-butter order. I am inclined to think they are. But the Southern California Schools need vocational guidance, life career classes, departments of research, and studies of social and industrial conditions. They are so rich in figs and fruit, figuratively speaking, that they do not have to use much flour in making the educational mixture. If they had a long financial de-

pression they would have to answer the question, "What education is worth while." At present no such question is asked. Anything that anybody else has had and "then some" is to them, worth while. Children stay in school in Southern California—they have to until they are sixteen—and they want to until they are eighteen. They are walking around the educational cafeteria counter loading down their trays, with tempting food. I do not know how much is digested. I do know that the system needs men and women at the head of the counter who can advise pupils on the what and the why of eating.

—ARTHUR DEAN.

## WASHINGTON CORRESPONDENCE

**I** HAVE been away from home so much the past two months that I have acquired the habit of scanning the newspaper headlines for the dispatches from Washington. And in the pursuit of this pleasant occupation I have been impressed with the meagerness of the news from "our nation's capital" generally available. I have made notes of several items upon which I wish to report, but I have been unable to secure the necessary data because of not being on the ground.

### TEACHING THE THING YOU LIKE TO DO YOURSELF

**T**HERE is an old familiar saying containing the injunction to the preacher to "practice what he preaches," and I have been thinking recently along lines somewhat analogous to this as applying to the teacher. It is generally recognized that any one who sets himself up to be a leader of others in respect to any course of action should himself have

some special qualification or experience in the matter. But there is one aspect of the situation that is not emphasized as much as it should be. I am thinking of the teacher's personal enthusiasm for his work.

You have met, as I have, the teacher of manual training whose daily work is to him a monotonous grind, which is gone thru with the best grace possible for the sake of the living he gets out of it. His real interest in life is somewhere else. You have met, as I have, the teacher of home making or domestic science, who, by preference, lives in a small apartment, cared for by others, and who gets her meals in a boarding house or cafeteria, because she wants none of the drudgery of housework. You have met, as I have, the teacher of art who has not yet conceived the notion of carrying out his art ideals in his own living quarters, in his own personal appearance, and sometimes even in his classroom.

These persons all lack that enthusiasm



for their work which I believe to be one of the elements of success too often neglected in our discussions with teachers.

Why should we not select for our manual training teacher the man who would himself rather be making something with tools than anything else he can think of? If we can pay such a one enough to induce him to impart something of this attitude to boys, the training they will receive is likely to be something more than mere shop drill and instruction—there will be contact with a live personality.

Why should we not select for our home economics teacher the woman who would herself rather be making her own home, her own clothing, her own hats, and the

like, than anything else she can think of? Such a woman, temporarily engaged as a teacher of homemaking to girls, will be far more than a teacher to them.

I believe it would be worth while for every manual training teacher to ask himself if he is teaching the thing he really likes to do himself. If he is not, let him ask himself one more question—"Why am I teaching manual training?" If he answers the first question in the affirmative, let him give thanks, for he is engaged in one of the choicest of occupations, and let him display a little more of his enthusiasm in the presence of his boys.

—WILLIAM T. BAWDEN.

## IN FOREIGN COUNTRIES

### THE REHABILITATION OF VOCATIONAL EDUCATION

**I**N REPORTING the recent conference of the Association for the Advancement of Education in Industry and Commerce the London *Times Educational Supplement* says that "almost all the speakers during the discussion began by thanking the readers of papers for their rehabilitation of vocational education. The meaning of this was that the papers had emphasized the culture possibilities of education that prepared for the life work of the pupil."

He then goes on to say that none of the speakers appeared to have read Arthur Greenwood's article on adult education in which he says:

"The problem is not how to get the articulate workers to absorb the culture of a higher social class, but how to enable them to evolve a culture of their own. . . . what is needed is that Labor should enrich the world with a culture woven out of its own deep experience of life."

"In the discussion it was implicitly admitted," continues the writer, "that the content of education counts, and the

real problem is whether there is a cultural value in the daily operations of commerce and industry." One speaker took the view that:

"There are whole strata where the worker has mere repetitive processes to go thru, which have and can have no culture value whatever. In those cases what is needed is really education for leisure. Culture must be introduced as something extraneous to the work of the factory. With 2,000 factory hands engaged on such processes he said that excellent results had been obtained by the introduction of classes in all manner of culture subjects treated in an interesting way. Others maintained that by going to the root principles of what was being done in counting house and factory there was abundance of culture material without going to the usual school sources at all. There is no real contradiction between the two views.

It is idle to deny that the first speaker is right when he says that certain kinds of factory work are totally uneducational. But the chairman, Principal Herbert Schofield, was also right in fighting for the possibilities of culture in the actual content of a man's vocation. It was no doubt a startling statement for him to make—that the objects of culture were better attained by the vocationalists than by those who were professional culturalists—but there is something to be said for it. We have only begun to deal with the culture side

of vocationalism. For that matter we may be almost said to be merely beginning with vocational education at all.

We may not admit Mr. Schofield's contention that vocational training obtains more liberal results than what is usually known as a liberal education, but we must admit that he has a case, and many of us will wish him God-speed in his efforts to develop the culture aspect of vocational training.

#### DAY CONTINUATION SCHOOLS OPENED IN LONDON

AFTER many months of preparation, much discussion of cost and the attitude of employers, and even a rumor that it would not come to pass, the London County Council opened its day continuation schools on the appointed day, January 10, 1921. About 12,000 boys and girls, or approximately 82 per cent of the whole number eligible came to the 44 schools on the first day. The general consensus of opinion thruout the city seems to be that the operation of the scheme has been well received by the employers and that the attitude of the children "is equally friendly." Because of the shortage of school buildings the school authorities have utilized many club buildings, university settlements and parish halls to provide sufficient housing space for the classes.

The curriculum of these schools is roughly divided as follows:

(1) Mother tongue; this group includes such subjects as civics and history, geography, literature, and industrial development, according to the bent of the teachers who are specialists in particular subjects. (2) Mathematics and science, the treatment and illustrations depending on the intelligence of the pupils. (3) Practical subjects, which will vary at different schools, but mainly will mean mechanical drawing and handicrafts for the boys, and needlework and housecraft for the girls. (4)

Physical training; the only compulsory subject and the one most likely to prove universally popular. It will include Swedish gymnastics.

#### VOCATIONAL EDUCATION IN CANADA

THE December number of *The Educational Review* published at Fredericton, New Brunswick, is devoted to vocational education in Canada. It contains articles by Col. L. W. Gill, federal director of technical education, Ottawa; R. B. Vaughan, director of technical education, Manitoba; Dr. F. H. Sexton, director of technical education, Nova Scotia; A. G. McGuire of the Nova Scotia Technical College; and Fletcher Peacock, director of vocational training, New Brunswick. These articles give the Canadian viewpoint, and, in considerable measure, what has been accomplished by our professional friends on the north.

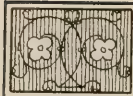
The leading editorial gives briefly a proposed scheme for training teachers. In part, it is as follows:

During the Conference of Vocational Education held in Ottawa the last week in October, resolutions were passed affirming the need of a central school for the training of teachers of vocational subjects to be employed thruout the Dominion. It was resolved that the accommodation and equipment of such school be provided by the Federal Government, while the maintenance be divided equally between the Federal and Provincial Governments, the proportional share of each Province being determined by the total population living in urban communities of 3,000 or over.

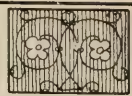
The training of teachers to carry on the work of vocational education is a vital need upon which the success of the movement rests. The teacher in such a school needs not only to be expert in his practical work but he must be able to impart his skill to others. There is need of theoretical, as well as, practical training in a vocational school and the teacher must be able to associate the two in such a way as to supplement the one by the other.

*The sphere of technical and handicraft education should impinge upon the sphere of the humanities. When skill and culture join there is the ideal handicraft, there is the living ideal of living learning.*

—HENRY WILSON.



# PROJECTS, PROBLEMS AND NOTES



## QUESTIONS ON WOODWORKING

A RECENT letter from Edward Waters, instructor in woodworking in the high school at Lead, South Dakota, states that in his four years of teaching woodworking he has never seen a good list of questions on that subject. He sends the following list, thinking it may be helpful to other teachers. He says that his students are able to stand a written examination on these questions at the end of one semester of instruction in woodworking:

1. What is an auger bit, a gimlet bit, a twist drill?
2. What is the use of the spur on the auger bit? What does the worm do?
3. How are the sizes of auger bits marked, size of gimlet bits and twist drills?
4. How can you bore thru a board without splintering on the further side?
5. Give four uses of handscrews.
6. Tell how to use handscrews.
7. Give proper method of fastening with screws, with nails.
8. Tell how and when to use a scraper.
9. Tell methods of sharpening scraper.
10. Tell when and how to use sandpaper.
11. Tell how to sharpen a chisel.
12. What should be used to force a chisel? Why?
13. How should we use the chisel when cutting across grain?
14. How do you cut a "thru" mortise, and dados?
15. Define tang chisel, socket chisel, firmer chisel, butt chisel, framing chisel and bevel-edge chisel.
16. Give exact method for laying out duplicate parts.
17. What order of procedure does a mechanic use in planing a stock in dimensions?
18. What angle should a plane-iron and chisel be ground. Should it differ with hard and soft woods? Why?
19. Tell how to properly sharpen a plane-iron and chisel.
20. Why is the grindstone kept wet? Why is the surface of an oilstone covered with oil?
21. Name and describe the uses of nine planes.
22. Name the seven principal parts of the jack-plane, and function of each.
23. Locate and tell the use of the four adjustments of the jack-plane.
24. Give three methods of planing the end of a board. Which is best? Why?
25. Define kerf. How should we mark and saw that the kerf is always on the waste?
26. What do we mean when we say the saw has set?
27. Describe a rip-saw and how it cuts.
28. Describe a crosscut-saw and how it cuts.
29. What does the number at the heel of the saw mean.
30. Define trammels, calipers, level, plumb-bob.
31. Give three uses of dividers.
32. Describe the T-bevel, its use. How do you set it at a 45 degree angle.
33. Name all parts of marking gage.
34. Tell how to use a marking gage.
35. Define pencil gage, mortise gage, butt gage, panel gage, and bit gage.
36. Name parts of try-square and how to use it.
37. Give rules for use of rule.
38. Describe and illustrate a dado joint.
39. Tell how to lay out a dado joint.
40. Tell how to cut a dado joint.
41. What is a glue joint? A spine joint?
42. Give the proper way to arrange and assemble for a glue joint.
43. Describe and illustrate a mortise-tenon joint.
44. Tell how to lay out a mortise-tenon joint.
45. Tell how to cut a mortise, a tenon.
46. What is essential before starting to finish a project?
47. For what reasons do we finish wood.
48. What are the classes of stains. Give advantages and disadvantages of each.
49. What is filler? What is it mixed with? What kinds of wood used on?
50. Upon what woods should shellac be used as a filler?
51. Would it be advisable to use shellac over a spirit stain? Why?
52. How is filler mixed and applied? When should it be removed?
53. What woods can be fumed? What is used in fuming?
54. Describe a wax finish.
55. What is very necessary to obtain a good finish?
56. When should pumice stone and water be used.
57. When should we use pumice stone and oil?
58. What is an oil finish? Give advantages and disadvantages.





59. With what may paint, varnish filler and stain brushes be cleaned?

60. With what may shellac brushes be cleaned?

61. Tell the difference between plain and quarter-sawed oak.

62. Draw plan of sawing for plain and quarter-sawed oak.

63. What is a bit brace, a ratchet bit brace, a rose counter sink?

64. What is a dowel pin? When used? Illustrate by drawing how to mark for dowel joint.

65. Should a joint be sanded or filed to fit? Why?

66. What causes glue to hold wood together?

67. Should the same thickness of glue be used for all woods? Which requires the thin glue?

68. Why should end wood be sized before glueing?

69. Will glue hold if oils, paint, shellac are on the joint? Why?

70. Why do we clamp glued pieces together?

71. Review how to figure lumber?

72. How should lumber be piled?

73. How is lumber kiln-dried?

74. What is your object in taking woodwork?

75. What is the object of teaching vocational subjects in high school?

### THE AEROPLANE

THE aeroplane was the result of an experiment in toy construction with sixth grade pupils, not to think out the principles of construction, but, solely to develop the use of tools. Two movable joint animals, and an automobile preceded the aeroplane.

In making the automobile and aeroplane, I endeavored to adhere to straight lines, to make the tool operations as simple as possible (the method of teaching was imitating the tool operations by steps in their proper sequence) to form a foundation for the pupil to proceed with the advanced work in the seventh grade.

I made a set of samples of the body, planes, and propeller, mounted each set on a separate panel, with a brief statement under each operation, as in making the propeller:

(1) Tool the piece to thickness, width, and length, mark center lines for hub.

(2) Scribe circle for hub; bore hole in center for screw.

(3) Mark angle and thickness of blades.

(4) Remove surplus stock with back-saw; cut to line.

(5) Cut away the square corners; make hub round.

(6) Taper blades toward hub; remove lumps with tools; sandpaper smooth.

The body was made first, the planes next. The two planes were fastened together, marked, and holes bored for the struts, thus insuring alignment. Each pupil made the round struts by the operation method, and fastened them in the planes with glue, in the same relation to one another in which they were bored. The planes were then fastened to the body with glue and brads; the rudders and bracket for the wheels put in place, the propeller fastened on with a  $1\frac{1}{4}$ "-6 round-head screw. The wheels are wood button forms, fastened on with  $\frac{3}{4}$ "-6 round-head screws.

If it is used outdoors for a weather vane, a coat of oil paint can be applied, if for an indoor toy, it can be finished with show card colors.

—ARTHUR SOLOMON,

Buffalo, N. Y.

### SHOVEL

THIS type of shovel makes a very simple problem that includes shaping, bending and riveting. The sheet is marked out and bent and riveted; then the handle is forged and fitted to the shovel.

#### STEPS IN MAKING SHOVEL

1. Cut stock to size.
2. File down rough edges.
3. Bend to shape.
3. Punch holes.
4. Rivet.
5. Forge handle.
6. Punch holes.
7. Fit to shovel.

### ICE TONGS

TOWARDS the end of the high school forge course, the ice tongs make a very useful and satisfactory problem. In order to carry this problem thru, it is suggested that a small die be made for shaping the point and a form made to shape each half of the tongs.

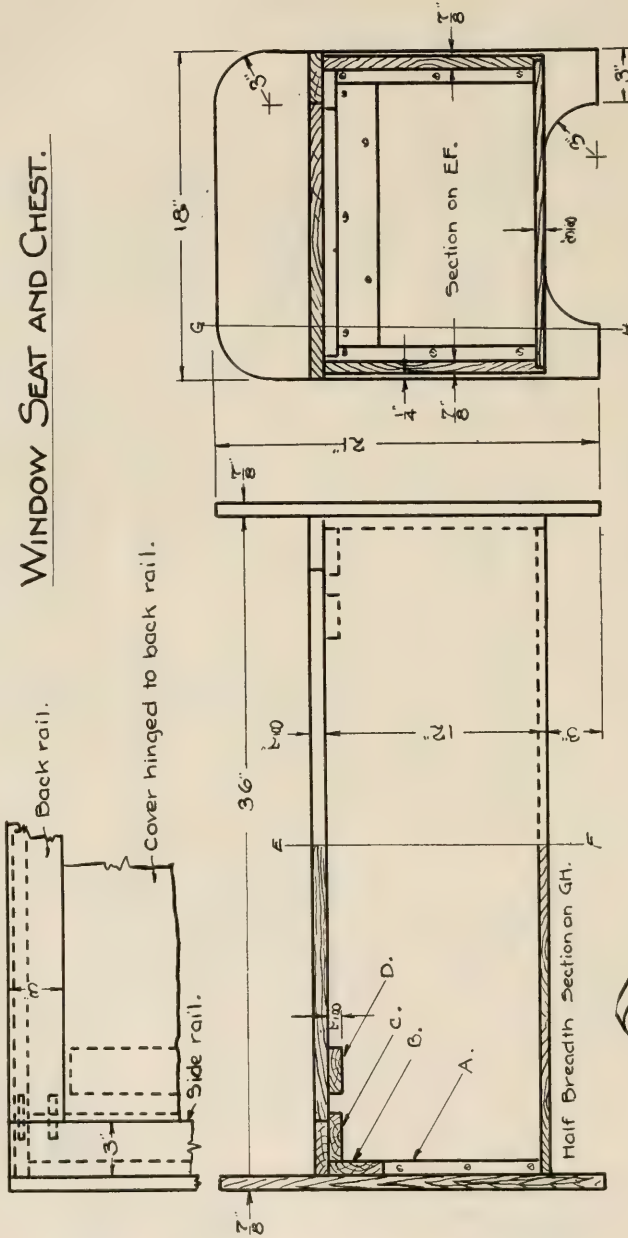
#### STEPS IN MAKING ICE TONGS

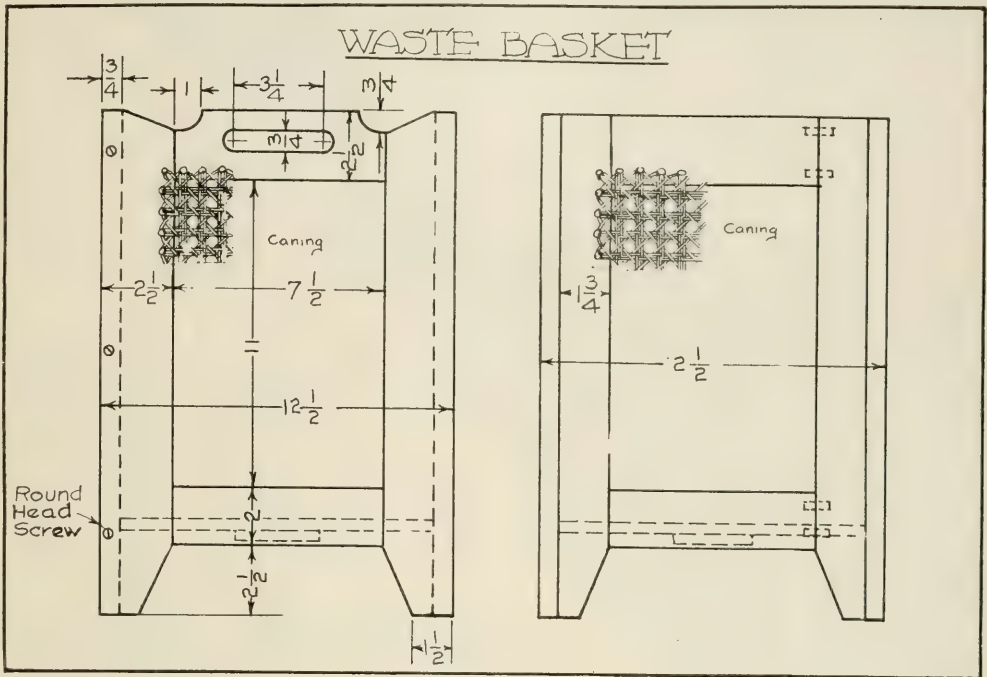
1. Make grip points.
2. Shape on form.
4. Cut off extra stock.
5. Shape eye.
6. Drill holes.
7. Rivet two halves together.
8. Forge links.
9. Forge handle.
10. Assemble.





# WINDOW SEAT AND CHEST.





### WASTE BASKET

THIS design was contributed by R. W. Wagner, instructor in manual training at the consolidated high school, Webb, Iowa. He says that he finds caning very popular and very easy to teach. The sides of this basket are in separate units of work, so far as caning is concerned. This makes it possible for two, three or four boys to work on one basket if that is desirable or to organize the caning independent of the wood construction work.

### WINDOW SEAT AND CHEST

This very practical and fairly simple project was contributed by Harold R. Wise of Boston. In many homes such a piece of furniture would be a great convenience in a sewing room, hallway or bedroom. Notice to what extent cleats are utilized in the construction. The project provides much practice in planing and an opportunity to do some good work in wood-finishing.

### GREY FINISH FOR OAK

*Question:* What sort of stain do you use when you wish to give oak a grey finish? — H. C. S.

*Answer:* Oak is usually not filled for grey effects.

There are grey stains on the market which may be used. If such are not available, or if one desires to make his own stain he can follow the suggestions below:

Prepare a solution of iron acetate by dissolving iron filings in acetic acid. The application of this solution reacts on the tannic acid in the oak producing an attractive gray. The strength of the solution and the amount of tannin in the wood determines the depth of the color.

Applying a solution of tannic acid just before the stain solution increases the effect.

Iron sulphate can be substituted in the formula and a bluish gray color will be produced.

You can also dissolve any slate gray aniline stani soluble in water and apply as any other water stain.

Use white shellac as a surfacer because orange shellac produces a brownish tone.

E. A. JOHNSON,  
Bradley Institute.

## CURRENT PUBLICATIONS

*Introduction to Vocational Education.* By David Spence Hill, president of the University of New Mexico. The Macmillan Co., New York, 1920. Size 7½ x 5 in.; 483 pages.

This book aims to state "facts and principles related to the vocational aspects of education below college grade." It is essentially a textbook for students of education. Each chapter begins with an outline and ends with a summary, to which is added questions or problems with a liberal list of references. The body of each chapter includes data selected from reports and sources not easily available for the use of students.

The book begins with the meaning of vocational education, and a discussion of social and administrative aspects of such education. Later, it considers agricultural education, education for industry, commercial education and the practical education of women and girls in separate chapters. The last two chapters of the book are on the uses of research and the applications of psychology to instruction and industry.

Aside from the general character and purpose of the book, the feature that stands out prominently is the viewpoint of the author in reference to the character of vocational education and its relation to general education. In harmony with the best thought of the present time, the author emphasizes the importance of making sure that education always includes the inculcation of right ideals and stimulates the emotions to react habitually to the true, the beautiful and the good, as well as give useful knowledge and practical skill. The author cries out against increasing knowledge and skill without at the same time giving ideals that are altruistic and specifically democratic. He says that knowledge and skill alone have brought evil as well as good to mankind.

*Clothing* by Mary Schenck Woolman, formerly professor of domestic arts, Teachers College, New York City. J. B. Lippincott Company, Philadelphia, 1920. Size, 5¼x7¾ in.; 289 pages; price, \$2.00 net.

The sub-title of the book is "Choice, Care, Cost." While these words do not tell the whole story of the book, they do suggest its distinctive feature, which is the study of clothing from the economic standpoint. The first chapter deals with thrift in clothing and ties up with the thrift campaign in the schools of the nation. Then follows a more or less technical discussion of woollen and worsted clothing, cotton clothing, silk clothing, linen for clothing and the household, clothing for health, etc. Serviceable clothing and intelligent shopping

are considered, also the clothing budget, repairing, dyeing, laundry work and cleaning. Chapters XIII and XIV tell how to organize community forces to meet the ideal of clothing conservation. Finally, an appendix contains many sketches showing how new garments may be made from old ones.

The book is a valuable and especially timely contribution to the literature in this field. It "faces the every-day living conditions of the people and treats clothing in its selection, use, care and cost." It is the result of years of experience and study in this field.

### RECEIVED

*The Story of a Pleasant Trip.* This is an attractively illustrated pamphlet issued by the Manitoba Department of Agriculture and Immigration. It deals with demonstration team work in Manitoba.

*Fifty-second Annual Report of the Principal of Hampton Institute, Hampton, Va.* This is the May, 1920, issue of the *Hampton Bulletin*.

*Trade and Industrial Education for Women.* Bulletin No. 58. Issued by the Federal Board for Vocational Education, Washington, D. C.

*A Syllabus in Industrial Relations.* By DeWitt S. Morgan, Arsenal Technical Schools, Indianapolis, Indiana. This pamphlet is issued by the Vocational Education Department of Indiana University, Bloomington, Indiana.

*Tree Surgery.* By J. Franklin Collins, forest pathologist. This is Farmers' Bulletin No. 1178. Issued by U. S. Department of Agriculture. It contains some information that ought to be of interest to teachers of woodworking.

*Survey of the Schools of Brunswick and of Glynn County, Georgia.* Bulletin No. 27, 1920. Issued by U. S. Bureau of Education. Price 15 cents per copy.

*Training Teachers for Americanization.* By John J. Mahoney, state supervisor of Americanization for Massachusetts. Bulletin No. 12, 1920. Issued by U. S. Bureau of Education. This bulletin contains a chapter on industrial classes by Frances K. Wetmore.

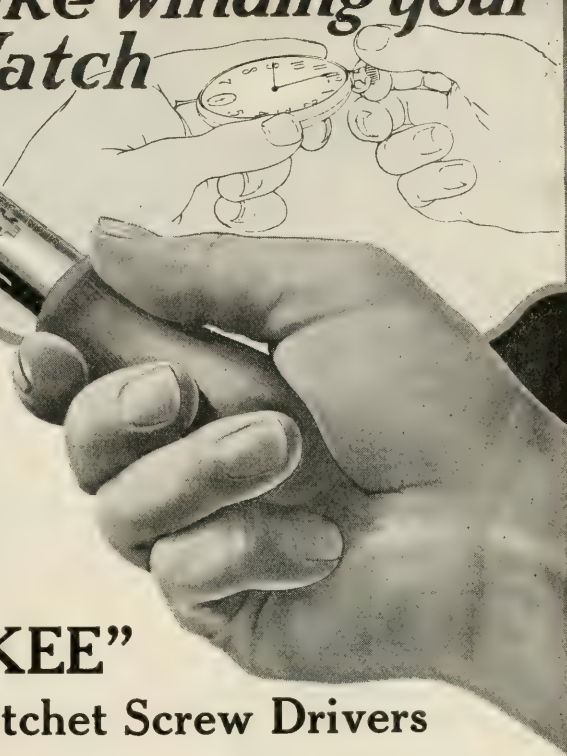
*Statistics of Public High Schools, 1917-18.* Prepared under the supervision of H. R. Bonner, Bulletin No. 19, 1920. Issued by U. S. Bureau of Education.

*Salaries of Principals of High Schools.* By William T. Bawden. Bulletin No. 4, 1920. Issued by U. S. Bureau of Education.

*The Boys of Monteith.* A small, attractive magazine published by the printing class at the Monteith School, Wilson Ave., Newark, N. J.



*Like winding your  
Watch*



No. 10 & No. 11 come in 2", 4", 5", 6", 8", 10" and 12" blades. No. 15 comes in 2", 3", 4", 5", 6", and 8" blades.

No. 15 has the handy knurled washer for starting wobbly screws with thumb and forefinger while hand steadies the driver. Diameter of blade,  $\frac{11}{16}$ ".

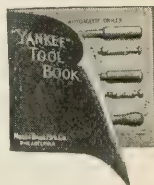
## "YANKEE"

### Ratchet Screw Drivers

Once the blade of the "Yankee" Ratchet Screw-driver is inserted in the screw slot, you just turn the handle back and forth. No tiresome grip-and-let-go movement of the fingers. You never shift your first good grip until the screw is driven home. You drive more screws; you save time and labor. A push of the ratchet shifter gives right or left ratchet movement; or rigid adjustment.

#### Your Dealer Can Supply You

Write for "Yankee" Tool Book showing full line of "Yankee" Tools in action. It's free!



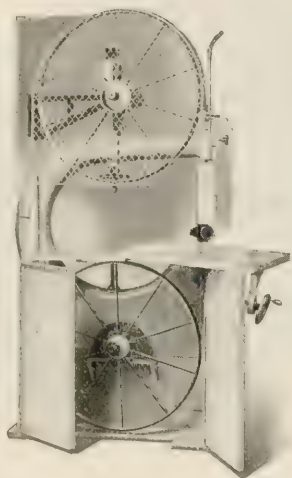
NORTH BROS. MFG. Co., Philadelphia

# "YANKEE" TOOLS

*Make Better Mechanics*

# West Side Iron Works

Manufacturers of  
**MOTOR DRIVEN AND  
BALL BEARING  
BAND SAWS**



36" BAND SAW

**APPLICABLE TO ALL  
CONDITIONS**

**DIRECT MOTOR DRIVE  
MOTOR DRIVE BY  
SILENT CHAIN AND PINION  
MOTOR DRIVE BY BELT**

Manufacturers of

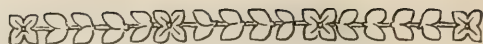
**14" BENCH BAND SAW  
36" BAND SAW  
42" BAND SAW  
42" BAND RIP SAW**

**WEST SIDE IRON WORKS**

Office  
1219 1228  
Washington Blvd.  
CHICAGO, ILL.



Factory  
GRAND  
RAPIDS,  
MICHIGAN



## FIELD NOTES—(Continued)

school campus, including the garage for the busses that bring children to the school. The unit system of construction has been largely used in the past, so that most of the buildings are comparatively small.

FROM VARIOUS SOURCES come statements that toy-making was an important and attractive part of the manual training work for the weeks just preceding Christmas. Here is an example: At the Oliver School in Lawrence, Mass., under Edward E. Parlin, instructor in manual training, an exhibit of toys and shop projects was held on December 20th and 21st. A feature of the exhibit was the toys made for the orphan homes of the city. Each boy made two toys of a kind—one to keep and the other to give to an orphan. In the painting of the toys Mr. Parlin had the cooperation of the art supervisor.

FRED HUNTER, superintendent of schools, Oakland, Calif., and president of the National Education Association, in summarizing the aims of the Oakland schools is reported to have given this as one of the purposes of the boy's vocational work: "To get closer to the life of the boy and his interests, and to show him that his education is a part of his life."

## TEACHER-TRAINING CLASSES IN CONNECTICUT

THE state of Connecticut has adopted a new teacher-training policy for obtaining trade school instructors. Formerly special classes were offered at Bridgeport and Meriden only; now they are being conducted in all of the state trade schools—at Meriden, Stamford, Bridgeport, Danbury, Putnam, Torrington, South Manchester, New Haven and New Britain. Entrance requirements are "character, personality and knowledge of a trade." These classes require attendance one evening a week for two hours. They are under the direct supervision of the Vocational Education Department of the State Board of Education, of which Frederick J. Trinder is the director. No charge is made for the instruction.

AN EXAMINATION of candidates for positions as teachers of manual training in the public school of Newark, N. J., will be held on April 9, 1921. The subjects in which candidates will be examined are (1) history, principles and methods of teaching manual training, (2) mechanical drawing, (3) structural and decorative design, (4) shopwork. Candidates must be graduates of a four-year high school or equivalent, and graduates of a professional or technical course with approved curriculum. One





Dixon's Eldorado is an inspiration to fine work—an invitation to begin, to draw—to do!

Teachers of Mechanical or Freehand drawing will appreciate the classroom value of this "master drawing pencil". It makes the lesson easier!

#### SAMPLE OFFER TO TEACHERS

Dixon's Eldorado is made in 17 leads. Tell us whether you teach Mechanical or Freehand drawing and we will send you suitable samples.

## DIXON'S ELDERADO

*"the master drawing pencil"*

JOSEPH DIXON CRUCIBLE COMPANY, Pencil Dept. 19-J, Jersey City, N. J.

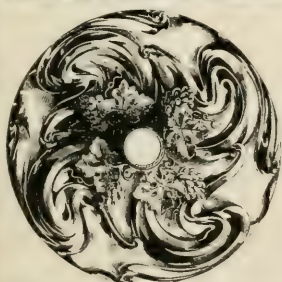


## Black Walnut

### MANUAL TRAINING LUMBER

### Special Candlestick Offer

25 pieces choice Black Walnut 12" length by  $1\frac{3}{4}$ " diameter selected specially for Turning and Carving. Quality will be guaranteed equal to specimen illustrated, which was turned and carved by a sixteen year old boy from Nevada. Delivered free to any point in United States for \$5.00.



Manufactured by

**FRANK R. PORTER**  
Washington, D. C.

*Write for special price lists  
on combination lots.*

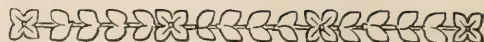


**BLACK WALNUT TREE**

250 Years Old 4 ft. Diameter







# THE Triple Training TO WORK TO SAVE TO EARN

## Teach Shoe Repairing

**Y**OU know it is a subject that touches every single boy under your care. All wear shoes. All shoes wear out and must be repaired. The urge of economy alone will make this course popular.

IT IS one of the best forms of hand-and-eye training.

TEACH Shoe Repairing as a vocation. There is a big and growing demand for shoe repairing mechanics. As a business Shoe Repairing has grown by leaps and bounds. Better workers are badly needed. Train your boys for this opportunity.

SHOE Repairing can be taught in every school, everywhere, with small space and low cost equipment.

*Write for full information.*

## Shoe Repair Supply Co.

Peoria, Illinois

### FIELD NOTES—(Continued)

year's successful experience in teaching manual training may be offered as a substitute for the latter. The salary schedule runs from \$1,600 to \$2,400.

A VOCATIONAL MACHINE SHOP COURSE has been opened in the high school at Wilmington, Delaware. This is the first course undertaken by the State Board of Education and approved by the Federal Board. It is an all-day course of four years leading to a high school diploma. A co-operative part-time course, also, is being organized.

SIMON GRATZ, in his first report as president of the Board of Education in Philadelphia, urges that opportunities for manual and industrial training be increased. He is reported as saying that 40 per cent of the enrollment of boys in that city is in mechanic arts and industrial courses. This is taken to indicate a change in sentiment toward the older academic courses. Mr. Gratz also refers to the fact that more than 28,000 pupils are on part-time.

*The Vocational Messenger* is one of the many well-printed school papers that are coming to us from vocational schools where printing is taught. This paper comes from the Boys Vocational School, Albany, N. Y., where E. A. T. Hapgood is the director of vocational education.

THE AMERICAN HUMANE ASSOCIATION has announced another poster contest. Cash prizes totaling \$280.00 are offered this year. The contest closes May 1st. There are four classes in the competition, and these cover everybody from five years of age up. Information can be gained from the American Humane Association, Albany, N. Y.

HENRY L. PARKHURST, for seventeen years an instructor in architectural design and related interior decoration at Pratt Institute, Brooklyn, N. Y., died on January 29th, following an operation for appendicitis.

### TRADE NOTES

**O**NE of the features of the Minneapolis convention of the Vocational Education Association of the Middle West was the exhibits of commercial firms. Located in a large room just off the lobby of the new Curtis Hotel, it was of easy access and proved of interest to the hundreds of members in attendance. The exhibits included a wide variety of equipment, machines, tools and supplies, and were attractively displayed. Many lines exhibited at former meetings were represented and in addition quite a number of new ones. The list included the following:

W. M. Welch Manufacturing Co., Chicago, Ill.  
The Stanley Works, New Britain, Conn.  
Henry Disston & Sons, Philadelphia.

# Vaughan & Bushnell's

## QUALITY TOOLS



Double Duty Pliers

It is important in vocational training work to educate students to an appreciation of Quality Tools.



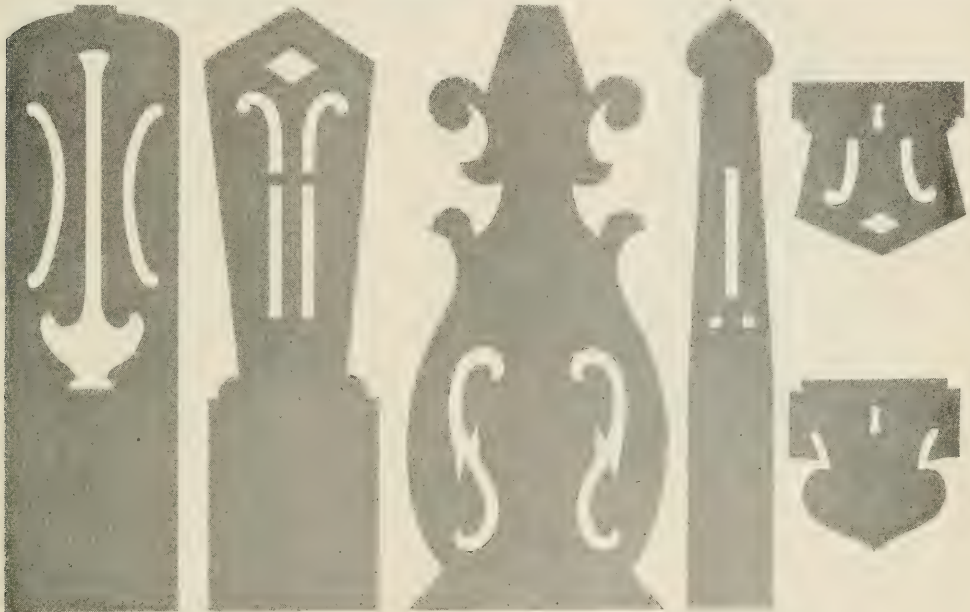
Carpenters Pincers with Wire Cutter

# VAUGHAN & BUSHNELL MFG. CO.

For 50 Years Makers of Fine Tools

2114-2138 Carroll Ave.

CHICAGO



## Solid Copper Trimming for Chests

**E**ITHER plain bands or fancy designs. This material is carefully finished and lacquered and will not tarnish. Our Sixth Annual Catalog of "Hard-To-Get" Materials; which we gladly send to Instructors, shows our complete line of chest trimmings, as well as a great many other supplies which you have had difficulty in obtaining.

**THURSTON MANUAL TRAINING SUPPLY CO.**  
Anoka, Minnesota

## LETTERING CARD—By *E. S. Maclin*

A card of alphabets. Shows Gothic capital and small letters both straight and slant. Printed on bristol, size 4" x 8". In packets of 10. Per packet, 35 cents.

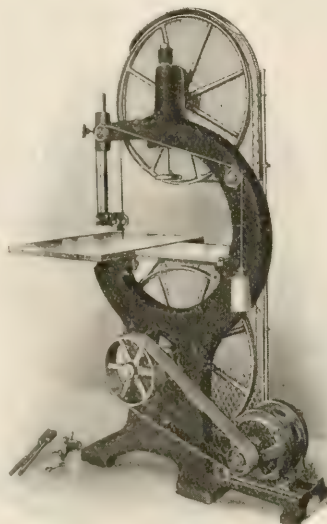
**THE MANUAL ARTS PRESS,**

**Peoria, Illinois**

# EQUIP WITH



## Woodworking Machinery



**FAMOUS**  
36 Inch Wheel Band Saw

**A STANDARD machine for commercial shop and one of our many machines especially suited to manual training needs. Motor driven, well guarded, accurate, and durable.**

**Fourteen thousand of these splendid band saws now in use.**

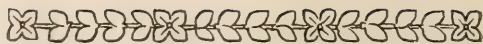
---

**Put your problems up to  
Our Engineering Division**

---

*Ask for Catalog No. 20*

**THE SIDNEY TOOL CO.**  
**Sidney, Ohio**



### TRADE NOTES—(Continued)

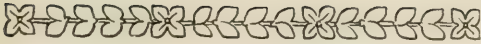
Chicago Radio Laboratory, Chicago.  
Monroe Calculating Machine Co., Orange, N. J.  
Dennison Manufacturing Co., Chicago.  
Singer Sewing Machine Co., St. Paul.  
Mergenthaler Linotype Co., Chicago.  
American Type Founders Co., Jersey City, N. J.  
Keuffel & Esser Co., New York.  
The Manual Arts Press, Peoria, Ill.  
Simonds Manufacturing Co., Fitchburg, Mass.  
Burroughs Adding Machine Co.,  
The Gregg Publishing Company.  
Barnhart Bros. & Spindler, Chicago.  
Oliver Machinery Company Grand Rapids, Mich.  
Felt & Tarrant Mfg. Co., Chicago.  
The Dictaphone Co., New York.  
South Bend Lathe Works, South Bend, Ind.  
Furniture Mfr. & Artisan, Grand Rapids, Mich.  
Underwood Typewriter Co.  
Dalton Adding Machine Co.  
Northwestern School Supply Co., Minneapolis.  
The Imperial Brass Mfg. Co., Chicago.  
Thurston Man. Train. Sup. Co., Anoka, Minn.  
Guy M. Jones Co., Indianapolis.  
Oliver Machinery Co., Grand Rapids, Mich.  
Kewaunee Mfg. Co., Kewaunee, Wis.  
E. C. Atkins & Co., Indianapolis.  
Joseph Dixon Crucible Co., Jersey City, N. J.  
The Williams Hardware Co., Minneapolis.

THE EXHIBIT of the American Type Founders Co., of Jersey City included type setting and the operation of presses. During the convention this enterprising firm set the type and printed for free distribution *The Printing Educator*, a four-page sheet, 7 $\frac{1}{4}$ " x 10" of up-to-the-minute convention news. F. K. Phillips and Geo. W. Webster were in charge.

THE CHICAGO RADIO LABORATORY displayed in operation a typical commercial wireless telephone and telegraph equipment, the same as supplied by them to high schools in Chicago. During the banquet on Friday night the equipment was used to transmit to the audience a saxophone solo which was played at the state university about two and a half miles distant. This practical demonstration was thoroly enjoyed and it demonstrated fully the practical nature and advantages of this equipment. The display and demonstration was in charge of R. H. G. Matthews.

HENRY DISSTON & SONS of Philadelphia, had an attractive display of hand saws, hack-saws, marking gauges, squares and benches, especially adapted for vocational school work. The firm was represented by J. K. Neely and Ernest Query.





## TRADE NOTES—(Continued)

THE STANLEY WORKS of New Britain, Conn., offered a very complete and attractive showing of their well-known line of tools, especially suited to technical and vocational schools. It included planes, rules, gages, hammers, screw-drivers, etc. Of special interest was their new No. 5¼- jack plane. This is to be known at the "junior jack plane." It is 11½" long and carries a 1¾" plane-iron. The adjusting screw is extra large, being 1¼" in diameter instead of ⅞", thus giving greater leverage. This plane is the result of criticisms of other sizes of planes and discussions of what plane is best for all-round work in school shops. It has often been claimed that the jack plane is too heavy and the smooth plane too short. The junior jack meets both of these objections, and ought to become popular for manual training school work. E. A. Cherry and Gus Warehoff were in charge of the Stanley exhibit.

THE SIMONDS MFG. COMPANY of Fitchburg, Mass., and Chicago, Ill., displayed their line of hand saws of all kinds and sizes. Included in the display was their blueprint charts on the *hand saw*, *steel*, *circular saw* and *band-saw*. This attractive display was in charge of R. D. Baldwin.

THE EXHIBIT of Keuffel & Esser Co., of New York, N. Y., included American-made drawing instruments, tee-squares, triangles, drawing boards, curves, etc., high-grade goods manufactured by this well-known firm. W. K. Hildreth was the representative in charge.

THE MERGANTHALER LINOTYPE Co. of New York, N. Y., displayed a linotype in operation. During the convention this wonderful machine was constantly clicking out lines of type with the operator taking his copy from paper or dictaphone. It attracted much attention and interest. In charge of the exhibit was Val Ring and E. W. Libby, H. B. Benson and Geo. Cornell.

THE WILLIAMS HARDWARE Co. of Minneapolis, Minn., one of the new firms represented at this convention, had an attractive display of tools and machines for metalworking, including blacksmithing, welding, vulcanizing, machine shop work, automobile shop equipment, etc. W. A. Keeble was in charge.

THE SOUTH BEND LATHE WORKS of South Bend, Indiana, represented by H. M. Appleman, displayed machine tools, especially designed for junior high and technical schools. It included their new 13" lathe, 11" lathe, and 8" bench lathe and a bench grinder.

THE EXHIBIT of Barnhart Bros. & Spindler of Chicago included a Poco Proof Press and cabinet,

# An Elementary Text-book on Architectural Drafting

## Drawing for Builders

By R. Burdette Dale, M. E.

Professor of Steam and Gas Engine Design,  
Rensselaer Polytechnic Institute.  
A Wiley Technical Series Book.

**A**N ideal basis for a problem course in elementary architectural drawing, for high schools, vocational schools, night schools, and industrial classes.

It *teaches* the student to make drawings and *instructs* him to read and use them. The problems are especially valuable—something more than mere copywork.

(*Carpenters and woodworkers, and builders in brick construction will find this book of great practical utility.*)

166 pages, 10½ by 8—69 figures, 50 plates—cloth,  
\$2.50 postpaid

## Architectural Drafting

By A. Benton Greenberg, B. A., and  
Charles B. Howe, M. E.

Another Wiley Technical Series Book

Drawings representing types of construction and design clearly illustrate the principles set forth in the text. The author's method leads to a broader and freer way of thinking and working.

110 pages, 10½ by 8—53 figures, 12 plates—cloth,  
\$2.00 postpaid

## General Problem Sheets

By Charles B. Howe, M. E.,

Issued in loose-leaf form, supplementing  
"Architectural Drafting"

23 sheets, 10½ by 8—paper binding  
50 cents postpaid

Let us help you solve the troublesome problems of correct text-books. Send for *any* WILEY BOOKS for FREE EXAMINATION, NOW.

### USE THIS COUPON

John Wiley & Sons, Inc.,  
432 Fourth Avenue, New York City.

You may send me the following on 10 days' approval:

Dale's **DRAWING FOR BUILDERS**  
Greenberg & Howe's **ARCHITECTURAL DRAFTING**  
Howe's **GENERAL PROBLEM SHEETS**

I agree to pay for the books or return them within 10 days of receipt.

Also please send me a copy of your Vocational News and put my name on your mailing list.

Name.....

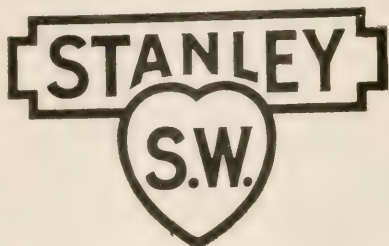
Address.....

If teacher, state school.....

If not teacher, give reference.....

M. T. M. 3-21

Our New Trade Mark



*Two Great National Industries Unite  
in Producing the Finest in*

## Wrought Steel Hardware and Carpenters' Tools

Become acquainted with these dependable products.

STANLEY Wrought Steel Butts, Hinges, Drawer Pulls, Bolts, Brackets, Screen and Garage Hardware, will be a constant source of satisfaction. Any architect is glad to specify them.

STANLEY Carpenters' Tools are first in the minds of good carpenters. The ownership of a STANLEY Hammer, Screw Driver, Plane, Rule, Level and Bit Brace will afford you many pleasing, profitable hours.

Catalogs of the above on request.  
Another STANLEY product is  
Storm Sash Hardware; ask your  
dealer to show it to you. Or if  
more convenient, write us for  
Folder 15B.

### THE STANLEY WORKS

Main Offices and Plant:

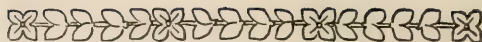
NEW BRITAIN, CONN.

Branch Offices:

New York  
Los Angeles

San Francisco  
Seattle

Chicago  
Atlanta



#### TRADE NOTES—(Continued)

type cabinet, punching machine, superior point system saw and various other devices and equipment suited to the school print shop. In charge of the exhibit and representing the firm were W. H. French, H. E. Vanderslius, Mr. Anderson and Mr. Olson.

THE THURSTON MANUAL TRAINING SUPPLY CO. of Anoka, Minn., displayed their special line of manual training supplies. Their exhibit included lamp shades, leather, upholstery supplies, chest trimmings, cabinet hardware, tea wagon wheels and many other "hard-to-get" materials. In charge of the exhibit was Harlan R. Thurston.

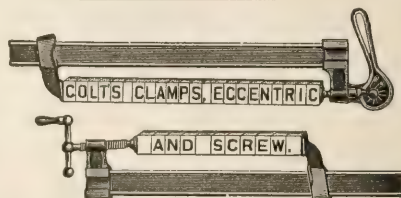
E. C. ATKINS & Co. of Indianapolis, Ind., displayed their line of Silver Steel hand saws, their "Unbreakable" hack-saw blades, etc. J. C. Flood was in charge.

ONE OF THE MOST INTERESTING and attractive exhibits of the convention was that of the W. M. Welch Mfg. Co. of Chicago. It included a large line of models for demonstrating mechanical and scientific principles. A glance at many of their models was sufficient to make clear mechanical and scientific facts which no amount of description or drawings could equal. M. W. Welch, sales manager of the company, was in charge.

THE NEWEST CONTRIBUTION for the betterment of the wood-working industry is the "Lightning" No. 500 Direct Motor Driven Variety Saw, for use in carpenter shops, box factories and variety shops or wherever a medium weight, wide range saw is required.

This is the latest development in the saw line for variety cutting, grooving, gaining, etc. and the construction is such that all the adjustments can be made very quickly.

It is equipped with a hollow chisel mortising and boring attachment allowing the mortiser to be used while the saw is in use without any interference.



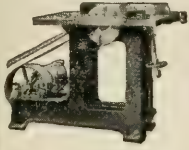
Forty styles of Quick Acting Clamps for the Worker in Wood, Cement and in the trades generally.

Your dealer will supply you.  
Ask for catalog No. 296.

**BATAVIA CLAMP CO.**

237 Center Street

BATAVIA, N. Y.



## Crescent Wood Working Machines

are bought extensively by men who first used them in Manual Training Classes. They choose CRESCENT because the unchangeable goodness of the machines was thoroughly impressed upon them in the Schoolroom. Give your students a chance to know CRESCENT quality.

Send for catalog of band saws, jointers, saw tables, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinder, borers, hollow chisel mortiser, Universal wood workers.

**THE CRESCENT  
MACHINE CO.**

46 Cherry St., Leetonia, O.



## Bradley Institute

Summer Session 1921

JUNE 20—JULY 22

Offers opportunity for study to teachers, supervisors and administrative officers of Industrial Education and Home Economics.

Courses in theory and practice as well as general college subjects will be available. Summer credits may be applied toward diplomas or B. S. degree.

Bulletin giving full information will be mailed on request addressed to

Supt. Summer Session

## Bradley Polytechnic Institute

Peoria, Illinois

## MONITE Waterproof Glue

**T**HIS modern adhesive should be found in every school. CASEIN glue is endorsed by the Forest Products Laboratory and is recognized as the coming glue for every wood-working and pattern-making use. Every student should know that it is possible to prepare with cold water a glue that produces a joint which is water and heat proof, and yet has as great strength as the hot glues, without their disadvantages.

We have prepared a booklet for distribution that gives valuable information about the properties, uses and application of CASEIN glues. A request will bring it to you—with a generous working sample, if you wish.

## Monite Waterproof Glue Co.

136 West Lake Street  
Chicago, Ill.

## VENUS PENCILS

From the softest grays to the deepest blacks the illustrator finds his best expression in the superb VENUS—the perfect pencil.

17 black degrees, 3 copying

For bold, heavy lines . 6B.

For writing, sketching 2B-5H.

For clean, fine lines, 2H-3H-4H-5H-6H.

For delicate, thin lines . 7H . 9H.

American Lead Pencil Co.

219 Fifth Ave., N. Y.

Dept. A

*The largest selling  
Quality pencil in  
the World*





# SHOP APRONS

*Guaranteed*

Adjustable  
Neck  
Strap

Saves  
Many  
Times  
Their Cost



**The Apron You Can Buy  
with Confidence**

Standard  
Equipment  
In the  
Best Schools  
Everywhere

Instructors Apron free with first order  
for one dozen.

Price, White 75c

Price, Brown 80c

Delivery Same Day

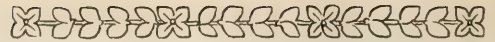
Send no money—Just your order to

**CANVAS PRODUCTS  
CORPORATION**

19-21-23-E. McWilliams St.

School Dept.

FOND DU LAC, WISCONSIN



## FIELD NOTES—(Continued)

It has many special features to commend it for school use.

This saw is made by J. A. Fay & Egan Co., Cincinnati, Ohio. It is illustrated in their advertisement elsewhere in this issue.

TEACHERS and SUPERVISORS planning woodworking equipment will do well to investigate the machines manufactured by the West Side Iron Works. This firm offers a line of motor-driven and ball-bearing band-saws designed to meet the needs of manual training and technical schools. They are located at Grand Rapids, Mich., with offices and sales rooms at 1227 Washington Blvd., Chicago, Ill.

THE CHICAGO FLEXIBLE SHAFT COMPANY recently opened a Detroit office for the sale and distribution of Stewart Furnaces, and to give the benefit of its service and counsel in heat treating problems to customers in that territory. The new office will be in charge of Geo. P. Beck, and will be located at 601 Kerr Bldg.

"TEACHING AS A BUSINESS," a little 18-page booklet of practical talks to teachers, answers many questions of special interest. What about salaries? Where are the teachers to fill the increasing demand? What will be the effect of the depressed conditions in business? etc., etc. It is published for free distribution by The Albert Teachers Agency, 25 East Jackson Blvd., Chicago, Ill.

## TOOLS

For Manual Training Shops.  
Send your inquiries to and get the especially low prices quoted by

**MONTGOMERY & CO. Inc.,**  
105 Fulton Street New York City

## Build Your Own PHONOGRAPH

Instructive—arouses pupils' enthusiasm—provides one of the best problems in cabinet making.

Let Your Pupils Build  
Choraleon Phonographs

We furnish, plans, blue prints, motors, tone arms, case material—in fact, everything required. Full instructions. Choraleon's have fine tone. Play any record.. Ask for particulars



**CHORALEON PHONOGRAPH CO.**  
920 7th St., Elkhart Ind.

## BOOK NOTES

THE Manual Arts Press has reprinted the short play "What is the Hitch?" by Arthur Dean which appeared in the January number of this Magazine. With it was also printed the author's comments on the play which were in the February number. Together they make an attractive pamphlet of 20 pages. This was distributed gratis at the Atlantic City meetings. A few extra copies are available for persons who will appreciate them. If you know such persons send their names and addresses to The Manual Arts Press.

"American education is rapidly forsaking a theoretical attitude and is becoming a practical instrument for efficient living."

"Ability to succeed financially is essential to a well rounded life. A good citizen is first of all self-sustaining."

"We recommend that thrift education be made a part of the course of study in all school systems, and a part of the regular instruction in all schools, either as a separate course, or co-related with kindred subjects."

"We recommend project practice in thrift as a method of practicalizing the principles which are taught. Project work has demonstrated its efficiency in many lines of education, and is absolutely essential in connection with the teaching of thrift."

The above quotations are taken from the report on thrift education prepared by a committee of the Section of State Superintendence of the National Education Association. In harmony with this report is the recent action of The Manual Arts Press in publishing the *Personal Expense Book* for School and College Students, prepared by Mrs. Janet Cation Thurston, formerly associate professor of home economics at the Iowa State College of Agriculture and Mechanic Arts. This book applies the principles of modern accounting to student needs, and may be used effectively in forming habits of thrift among students.

The thrift that is needed in American teaching is not the miserly-saving kind, but the saving and wise-expending kind. This book provides space for this kind of records. There are columns for food, clothing, shelter, school expenses and advancement. Under "clothing" there are the sub-headings "new," "repairs," "dry cleaning," "laundry." Under "school expenses" are "books," "athletics," "club dues," and "fees." And under "advancement" are found "stationery and stamps," "church and charity," "gifts," "health," "recreation," "savings," "sundries," "carfare," and "travel." Such a book well kept and well considered will be a good practical

lesson to any student. It will be a start in business habits that is usually lacking in American school students and too often in college students.

In a recent review of *Elementary Forge Practice* by Robert H. Harcourt the *Manual Training* (England) review writer says, "It is quite the best book on forgework we have come across because of its conciseness. Whilst it contains every thing that is essential to an understanding of forge practice it is expressed in a very simple way and with an economy of words. To attain any degree of efficiency in this important branch of manual training it is necessary that ample facilities should be afforded for practical experience. It is to supplement this practical work and to assist the student in grasping the fundamental principles that Mr. Harcourt has written this book."

Present methods of teaching emphasize projects, and many teachers are not hesitating to attempt large projects when they can get the needed materials. One of the most popular of these larger projects is the construction of a building of some kind. Teachers who do this are finding Griffith's *Carpentry* almost invaluable. Even if the teacher is himself an experienced carpenter he finds that a few copies of *Carpentry* are of tremendous assistance. The fact that the book begins with laying out foundations and carries the process of building thru to interior finishing; the fact that it includes estimating and useful tables, added to all the other details, makes it just what is needed in building projects.

The following quotation taken from a recent letter from a subscriber expresses a growing opinion among teachers of industrial subjects:

"It seems to me that the *Manual Training Magazine* would be doing a splendid thing if it would emphasize the importance of textbooks. This applies particularly to the practical man who has taken up teaching. He seems to think that if he uses a text in his classroom it is a reflection on his ability. While a textbook is helpful to the instructor, it should be borne in mind that its chief use is to assist the student."

*Educational Toys* by Peterson and *Toy Patterns* by Dank were published late in the fall and especially advertised just before the Christmas holidays because most teachers have their pupils make toys at that time in the year, but, as pointed out by *Manual Training*, they are not essentially Christmas books, but are for all the year round. They are good whenever and wherever Toy-making is taught.



# GOOD TOOLS

Are Essential For

## GOOD WORK

Since 1848 we have adhered to one policy.  
To handle only the very best in quality.

Our new Catalog No. 208 of over 300 pages is of particular value to those interested in VOCATIONAL TRAINING.  
Copy upon request.

## Hammacher Schlemmer & Co.

HARDWARE TOOLS AND SUPPLIES

NEW YORK, Since 1848

4th Ave. and 13th St.

### Cushions, Spring Seats Upholstering Supplies

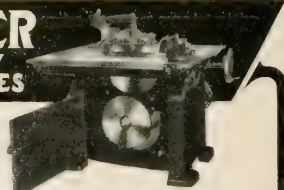
We issue price list which also contains valuable information for Instructors in Manual Arts.

It is free—write for it.

DODGE-DICKINSON CO.

Bloomington, Illinois

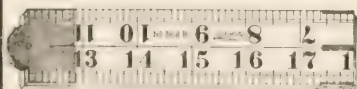
### MITER SAW BENCHES



The "Tannewitz" Universal Double Revolving Arbor Saw Bench with Sliding Table and Taper Pin Gauges is the only logical tool for the wood shop where frequent setting up is the rule and accuracy is the goal. Send for bulletin.

THE TANNEWITZ WORKS  
GRAND RAPIDS, MICH.

# LUFKIN



STEEL and WOOD RULES - - MEASURING TAPES  
Complete high grade lines

On Sale Everywhere. Send for Catalog.

SPECIFY—

**LUFKIN**

THE **LUFKIN RULE CO.** Saginaw, Mich.

New York

No. 106-110 Lafayette St.



# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.

WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City.

EDITORS FRANK M. LEAVITT Associate Superintendent Public Schools, Pittsburgh, Pa.

WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON.

Published monthly by The Manual Arts Press, 237 N. Monroe St. Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

## CONTENTS

NEW VISIONS AND THEIR FULFILLMENT.....	Charles A. King 311
HOUSEHOLD MECHANICS IN THE DETROIT PUBLIC SCHOOLS. .	Earl L. Bedell 316
LARS ERIKSSON: EARLY AMERICAN SLOYD TEACHER (With portrait).....	324
PHOTOGRAPHS FROM EVERYWHERE.....	326
From Stillwater, Oklahoma—St. Paul, Minn.	
EDITORIAL REVIEW FOR THE MONTH.....	Charles A. Bennett 328
Two Tendencies in Shopwork Instruction—The Future of the Sloyd Training School— The New President of the Mid-West Association.	
A POINT OF VIEW.....	Arthur Dean 331
The Meeting of the National Society—On Going to Conventions.	
WASHINGTON CORRESPONDENCE.....	William T. Bawden 334
Catholic Bureau of Education—Mr. Dodd Comes to Washington—Bureau of Educa- tion Conference—The Atlantic City Convention.	
IN FOREIGN COUNTRIES.....	Charles A. Bennett 336
Letters from Dr. Kerschensteiner—Training in the Glass Industry—Cost of Educa- tion in England.	
PROJECTS, PROBLEMS AND NOTES.....	338
Comparison of Different Types of Glue—Effect of Varying the Number of Plies in Plywood—Good Use of Wood-Turning Equipment—Suggestions for Poultry House Builders—Charring does not Preserve Wood—Problems in Forging—Making May- poles—Color Scale for Tempering Tools.	
CURRENT PUBLICATIONS.....	343
FIELD NOTES.....	IV
More Varied Manual Activities in the Schools of California—Oklahoma Educational Association Meeting—The Progress of Vocational Work in Oklahoma—Minnesota Notes—Around New York—Southeastern Items—Western Arts Association Meeting and Exhibit.	
TRADE NOTES.....	XXVI
A New Rule—Exhibit at Atlantic City.	
BOOK NOTES.....	XXXVII

*This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.*

Entered at the Post Office at Peoria as Second-Class Matter. Copyright, 1920, The Manual Arts Press.

## FIELD NOTES

### ASSOCIATION MEETINGS

Western Arts Association, L. R. Abbott, Secy., 234 N. Division Ave., Grand Rapids, Mich. Meeting at Peoria, Ill., May 3-6, 1921. Albert F. Siepert, Bradley Institute, Peoria, Ill., Local Chairman.

National Education Association. Meeting at Des Moines, Iowa, July 4-8, 1921. Reservations made by Charles F. Pye, 407 Youngerman Bldg., Des Moines, Iowa.

### IN CALIFORNIA

AT THE recent convention of the California High School Principals, held at San Rafael, February 7, 8, 9 and 10, practically a whole day's program was devoted to various aspects of vocational education and manual training. The chief speaker of the day was Dr. E. R. Snyder, State Commissioner of Vocational Education. He addressed himself to the topic "Vocational Education." The title however, is a misnomer for Dr. Snyder covered the entire field of vocational activities from what he was pleased to call "community occupations" carried on in the upper grades of the elementary school, to such vocational education as would be conducted on the basis of the Smith-Hughes plan.

A chart which the speaker used in discussing the topic of manual activities in the school, showed two major divisions; namely, preparatory and pre-vocational education, which included a course in community occupations and vocational education. In discussing the type of manual activities which he conceived should form a part of every school curriculum, Dr. Snyder pointed out that in a democracy no education can be considered liberal which does not provide for such activities as will enable the prospective citizen to fully comprehend and appreciate all of the major phases of social and economic activities; and as a very large proportion of persons engaged in gainful occupations are concerned with manual activities, he held that any curriculum which fails to provide liberally for manual activities, does not meet the full requirements of a liberal preparatory education.

### MORE VARIED MANUAL ACTIVITIES IN THE SCHOOLS

To meet the need of manual activities in the preparatory period of education, Dr. Snyder proposed a radical change in the ordinary manual training laboratory which as a rule is devoted almost solely to woodworking. His proposition was that the room to be used for manual activities should be large enough to provide for project work in the more common phases of trade and industrial work, and

also in agriculture. The plan which he presented showed a room about forty feet by one hundred. It is to be provided with a simple equipment each for electricity, sheet metal, woodwork, cement work, auto repair, machine shop work, shoe repairing and agricultural project work. This room, one can readily see, must of necessity be materially different in appearance from the room we generally know as the manual training room—a room which has its benches in uniform rows and which is designed for a course quite formal in character.

The course in community occupations should be made available to pupils of seventh and eighth as well as of all high school grades. This course should serve at least three purposes as follows:

First, it should serve as a finding course, designed to assist the pupil in learning about the different common trade and industrial occupations; in order that he may be prepared to choose more intelligently should he decide to engage in trade or industrial work.

Second, it should serve to train the youth to intelligently perform the mechanical duties incident to common life.

Third, it should contribute to his liberal education by giving him a broad general knowledge of the economic aspects of life.

The speaker said very little regarding vocational courses because he felt that such courses have already been well studied out, and are already well established in this state. On the other hand, he laid stress on the importance of the community occupation activities which, he pointed out, were of great importance in the training of all individuals who are to be citizens in a democracy. The vocational courses he held are designed for producers, the general courses are for the purpose of preparing intelligent consumers; and, as all children, regardless of vocations, are destined to be consumers, all must receive the general training.

It is interesting to note that the speaker's remarks impressed most favorably the large group of three hundred or more principals, practically all of whom have been academically trained and are of an academic turn of mind. They applauded with emphatic approval the stress which Dr. Snyder placed upon the liberal educational function to be served by the general manual activities course he outlined.

Later in the morning session, following Dr. Snyder, John C. Beswick, the state supervisor of trade and industrial work, was called upon to explain some of the needs in this state in the field of trade and industrial education. Mr. Beswick pointed out three: better vocational shops, additional vocational



# The IRWIN Bit

REG. U.S. PAT. OFF.

## Your Students are Sure to Use Irwin Bits

**M**ORE Irwin Bits and Augers are in use than any other make, and your pupils are sure to use them as soon as they begin practical work.

Why not use Irwins in school—and teach with the most widely used bits?

Irwin world-wide popularity is based on the accuracy of Irwin heads—their fine boring qualities, long life, and the fact that they give you the greatest speed of operation that can be combined with perfectly finished work.

Do not accept any bit as an Irwin unless it has the Irwin trade-mark on the shank.

*Write for booklet on the selection,  
use, and care of bits.*

**THE IRWIN AUGER BIT COMPANY**  
245 Grant Street Wilmington, Ohio

*Originators and sole manufacturers for 30 years of  
the Genuine Irwin Bits and Augers*





## FIELD NOTES—(Continued)

courses, and further training for teachers. The former he did not enlarge upon, since Dr. Snyder's explanation had practically covered that point. As to additional vocational courses, he devoted most of his time to an explanation of the need of dental assistants. And in discussing the further training for teachers, Mr. Beswick urged upon the principals the desirability of sending their manual training and vocational teachers to summer school. With reference to the latter fact, he pointed out that there would be two series of courses given in this state for the training of trade and industrial teachers. One of these is to be given at the University of California at Berkeley, and the other at the Southern Branch of the University at Los Angeles.

In the afternoon of this same day, devoted to vocational education, reports regarding part-time education were given by several of the more prominent directors of that work in different parts of the state. Virgil Kersey, director of part-time education from Los Angeles, spoke of the large number of students they have in part-time education in Los Angeles, and he enlarged upon the splendid co-operation they are having from employers. Walter A. Tenney, the principal of the Vocational High School of Oakland, who is acting in the capacity, also, of director of part-time education, delivered a paper devoted mainly to the procedure by which vocational education in the City of Oakland was established. Among other things of importance, he pointed out, in his paper, that for the best results with tradē and industrial pupils, it was highly desirable to have a technically trained mechanic give the mathematics, drawing, and science that is necessary. A university trained teacher, however expensive his scholastic training in either of these subjects, is not as effective as a teacher of part-time pupils from the trades and industries as is the highly trained mechanic who is in possession, not only of trade knowledge, but also has the necessary technical knowledge.

C. L. Carlsen, the director of part-time education of the city of San Francisco, pointed out the surprisingly large number of pupils which it has become necessary to take care of in San Francisco due to the provisions of the Part-Time Act. He laid stress upon the difficulty with which his department had been confronted in San Francisco due to the position taken by two important employing bodies; one a large railroad corporation, and the other an employers' association. Mr. Carlsen made known that these two bodies were behind a movement to institute a change in our Compulsory Part-Time Education Act which would permit the substitution of evening school for *day* compulsory part-time

education as is now required. One he said need not consider this proposed change long before coming to realize its vicious outcome—ultimate compulsory evening school work for many of the youths subject by law to part-time education. Other speakers on that same program were B. X. Tucker, principal Richmond High School; F. H. Sutton, director of part-time education of the city of Fresno; Eldon Ford, director of part-time education at Santa Barbara; John Dale, director of the work in Sacramento; and Superintendent W. E. Faught of Modesto.

So important, apparently, is the subject of manual activities of all kinds in the schools of this state, that while the program of the principals' convention, which lasted over a period of three and a half days, was intended to cover all problems confronting the high school principals of the state, very few of the numerous speakers did not, in one way or another, touch upon the topic of vocational education and allied topics. Even the special address, delivered by the Honorable Stanley B. Wilson, member of the State Board of Education, on the subject of "An Equal Opportunity for All," was in effect a plea for better and more wide-spread vocational education. And on the day especially set aside for the subject of vocational education, Dr. Snyder, in introducing his remarks pointed out the fact that practically all of the previous speakers had devoted much of their time to the subject of vocational education, and that the dominant interests of secondary education at the present time in California were pre-vocational, vocational, part-time and adult education.

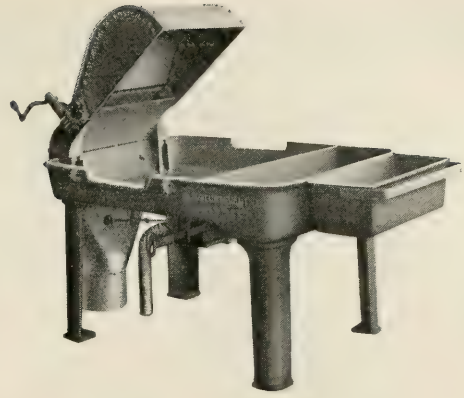
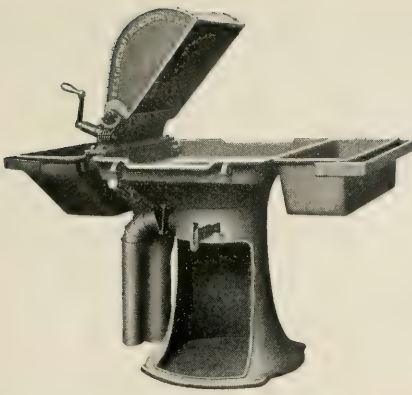
—CHARLES L. JACOBS.

## FROM THE SOUTHWEST

OKLAHOMA EDUCATIONAL ASSOCIATION MEETS

THE fifteenth annual convention of the Oklahoma Educational Association was held at Oklahoma City Feb. 10-11-12. That industrial work was not left out of consideration in the program of this meeting is evidenced by the fact that William Crawford, principal of the Boys' Trade School of Boston was one of the main speakers. Other well known educators who appeared on this program were Dr. Chas. H. Judd of the University of Chicago, and Dr. E. B. Bryan, president of the Colgate University, Hamilton, N. Y.

A department conference of the manual arts teachers was held on Friday afternoon. At this meeting Mr. Crawford gave a very interesting address in which he brought out a great many points



## Sturtevant Stationary Forges

Are built in sizes and types to cover the entire range of forge work. Their design, construction and wide range of adaptability has won pronounced approval from instructors in the many technical and manual training schools where this equipment is used. It is approval based upon satisfactory performance. The fact is that these forges are easy to work with, convenient, and trouble proof. The many valuable qualities of these forges tend greatly to inspire confidence and interest in the student. Make a personal investigation of an actual installation and reflect with confidence upon the organization back of Sturtevant equipment. Communicate with us and we will gladly cooperate.

*Ask about our complete Forge System.*

### B. F. STURTEVANT COMPANY

HYDE PARK, BOSTON, MASSACHUSETTS

AND ALL PRINCIPAL CITIES



## FIELD NOTES—(Continued)

in the organization of trade and vocational school work, and in the method of carrying out this type of work in the school shop. Mr. Crawford emphasized the difference in purpose between what is known as manual training, and strictly vocational training. He stated that there are a number of popular, mistaken notions about trade school work which must be corrected. One is, that a boy can learn a trade by tinkering around in the shops. This assumption is wrong, the speaker pointed out, for it takes systematic and genuine application to a series of operations as covered by the requirements of the trade before the student can claim to have had a trade training.

Another erroneous idea of long standing, it was stated, is the theory that almost any mechanic will function as a teacher in trade schools. Mr. Crawford emphatically stated that the qualifications required of a trade school teacher should be equal to those expected from a teacher in any other school. The speaker went further than this and made the statement that it requires a higher type of teacher for industrial work than for academic work because the former type demands an application of the principles taught in the actual shop operations. "The test of the ability of a teacher," the speaker said, "comes when applied work is required." Incidentally, it was stated that the teachers of trade and vocational work should receive a salary equal to that of those of any other subject.

"Only trades which have an educational content should be offered by the public schools" Mr. Crawford said. The public schools should spend no money in teaching trades which can be learned faster and more efficiently in the trade itself. As a trade with educational content, the speaker pointed to that of the machinist. He said that when a boy has learned all that there is to know about the shaper, for instance, he has quite a liberal education. The advantage of the factory method of instruction in the trade school compared to the individual project method was also discussed by Mr. Crawford. He stated that this method has proved to be a great factor in instilling respect in the boys for the other fellow's work. He said that the teachers in his school had forgotten the meaning of the word discipline since this method has been in use in the shops.

R. H. Wilson, state superintendent of public instruction in Oklahoma, spoke next in response to a movement by the industrial arts teachers of the state to perfect a system of certification of teachers who wish to instruct in shopwork in the public schools. By this method, it has been thought, a

minimum standard requirement in special training can be expected and demanded of any person before he is given permission to teach industrial branches in the public schools. Mr. Wilson declared himself heartily in favor of a scheme of this kind. He suggested that a committee be appointed for the purpose of communicating and co-operating with his office in regard to the perfection of these requirements.

Another problem of interest which was under discussion is the establishment or appointment of a school in the state to serve as the center for the training of teachers of industrial work. N. O. Horning, director of manual training, Tulsa, Okla. made an interesting talk on this subject. He made the statement that there is now a shortage of teachers for this work in the state, and that there is at present no school that is adequately qualified and which makes it a specialty to prepare the teachers needed within the state.

At the close of the program there was a meeting held of the executive council of Industrial Education Division of Oklahoma Educational Association. At this meeting plans were laid for a membership campaign in order to have every industrial teacher on the roll of this organization. Plans were also made for a state-wide meeting of the industrial teachers next fall.

### THE PROGRESS OF VOCATIONAL WORK IN THE STATE OF OKLAHOMA

PEOPLE outside of the state of Oklahoma—particularly those who are inclined to believe that this part of the world is still in its most primitive state, with outlaws and wild Indians endangering the lives of the few white people who may be found here—will be interested to know that in this state considerable advance has been made along the lines of vocational work as approved and aided by the federal government. Chas. W. Briles, who has held the office of state director of vocational education for nearly three years, has been constantly at work directing this movement. With the addition of Dr. Henry Holtzclaw as state supervisor of trades and industries to the force of the state director's office, the possibility of covering the field more thoroly has already been demonstrated.

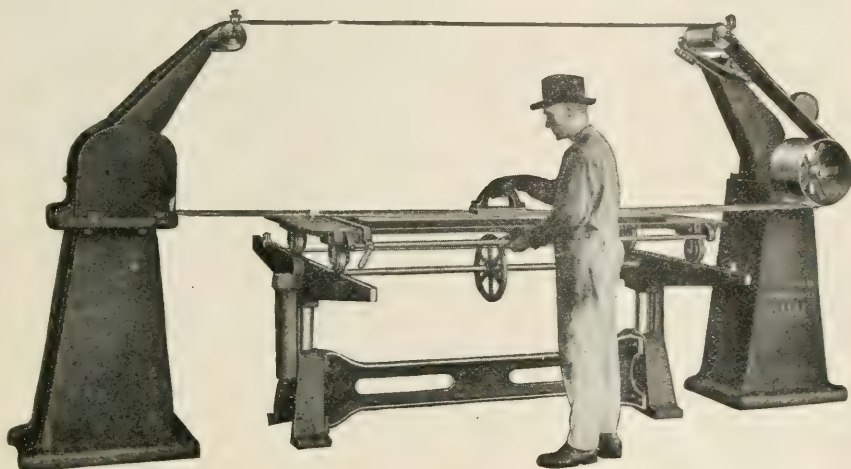
A very interesting report of the present status of the vocational work comes from Dr. Holtzclaw at this time. From this report the following is quoted:

"There are nine schools in the state which are giving some form of vocational courses in trade and



# How to Sand Irregular Shapes is One of the Cabinet-Maker's Problems

That Should Be Taught in Schools



## No. 453 "Lightning" Flexible Belt Sander

No. 453 will sand panels and large flat surfaces, as well as molding, concave, convex and other irregular work that is now being done by hand. Bulky work, such as refrigerators, desks, phonograph cabinets, etc., can be quickly and easily sanded on this machine by removing the table. This tool is being used in large furniture and piano factories, interior finish plants, schools, etc. In fact, every shop that does any hand sanding can use this machine to advantage.

*Send for Special Bulletin T-30, giving full details about this wonderful machine.*

### J. A. FAY & EGAN CO.

Worlds Oldest and Largest Manufacturers of Woodworking Machinery

Established 1830

730-750 W. Front St.

Cincinnati, Ohio



## FIELD NOTES—(Continued)

industrial work which meets the requirements of the State Board for Vocational Education, and are subject to reimbursement. These schools are: Tulsa, Okmulgee, Sand Springs (white), Sand Springs (colored), Claremore Military Academy, Stillwater, Muskogee, and Oklahoma City.

"Tulsa is the only city in the state in which the three types of training, viz. all-day, part-time, and evening, are being given at the present time. In their all-day courses instruction is given in auto mechanics, and in their part-time and general continuation classes three teachers are employed, one giving the entire time to this work. Instruction in the evening classes includes auto mechanics, drafting, carpentry, shorthand, typewriting, garment making, and three classes in garment making and dietetics.

"In Okmulgee all-day classes are conducted in carpentry, printing, auto mechanics (first and second year), millinery, cooking and sewing. The allied subjects are mechanical and topographical drawing, mathematics, press work, bookbinding, applied science, electric wiring and repair, household chemistry, and home decorating. The program at Okmulgee is the most extensive program given anywhere in the state.

"In the Sand Springs white schools, courses in printing are given in the all-day classes. The vocational class prints their school paper, *The Sand-tonian*. They also print their own text-book which is composed of 20 pages of carefully selected material compiled by Orval C. Husted, the printing instructor. This little text is used by all the printing classes in the school.

"At the Sand Springs colored school, a course is given in shoe repairing. This is the only shoe repairing shop for negroes in the state. A great deal of local work is done by this class; as a matter of fact, the school is self-supporting.

"The work at Claremore consists of a class in auto mechanics in which the usual type of instruction is given."

Dr. Holtzclaw states that Muskogee is putting on a very excellent program in their evening school. Courses offered are: motor repair, English, shorthand, journalism, business arithmetic, the operating and care of Burrough's calculating machine, telegraphy, and millinery. A very interesting "thrift" rally and program was held recently in order to advertise the evening school program. The meeting was held in the auditorium of the high school. The audience was first entertained by the school orchestra, and the student body which played and sang community songs. The principal of the

night school then made an address on "The Possibility of the Night School." After the program, a luncheon was served in the high school cafeteria.

About the work in Stillwater, Dr. Holtzclaw says the following:

"At Stillwater, there is offered practical trade courses in auto mechanics, cabinet making, carpentry, and machine shop practice. At the present time however, only two of these classes are in operation. Thirty-four students are enrolled in the two year courses of auto mechanics, and nine in the courses for machine shop practice. Each student works sixteen hours in the shop, six hours in applied science, and four hours in mechanical drawings; and in addition to these, there is one elective course in either English, citizenship, or physical education."

The automobile courses are especially comprehensive, including assembling cars and repairing broken parts, magneto, starting, ignition, carburetor adjustment, soldering, brazing, and oxy-acetyne welding. The machine shop work also is run on a practical productive basis. Attention is called to the output of 150 nut crackers, and a number of glue presses and wood-turning lathes during the first semester of this year as evidence of the practical aspect of the shop instruction.

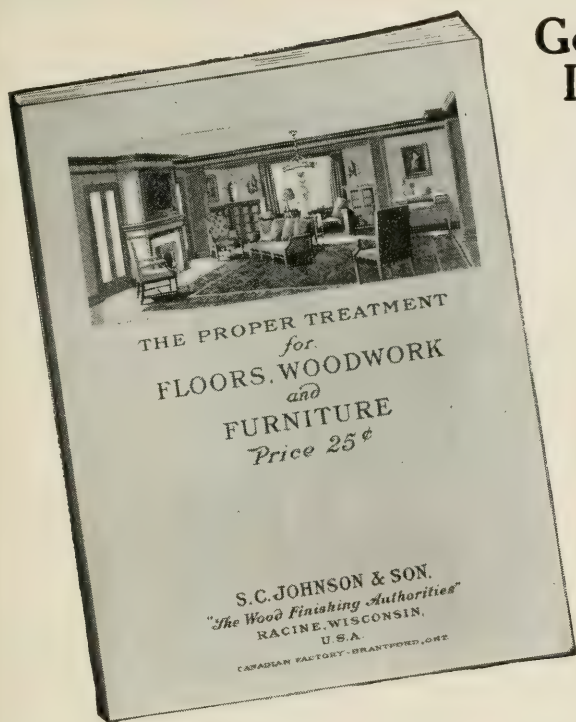
—E. E. ERICSON.

## MINNESOTA NOTES

THE Minneapolis Board of Education is planning to develop the present Vocational High School to afford part-time courses and trade extension work for youths and adults. The school will take on the aspects of a vocational opportunity school to a greater extent than it has up to the present. There is a decided feeling, however, among the school officials and Board of Education that these trade courses shall not be allowed to encroach on the manual training work given in the public schools. The manual training and prevocational work now being given will continue to be offered as a necessary part of a well-rounded course in general education.

St. Paul has recently opened an office for Junior Employment Service under the direction of Geo. M. Brace, director of vocational education, and supervisor of manual training of St. Paul for the guidance and placement of all boys and girls from 16 to 20 years of age. Miss Eleanor Mitchell of St. Cloud, Minn. has been appointed as counselor for girls, and J. J. Berger, assistant to Mr. Brace in manual training work, is the counselor for boys.

The St. Paul Vocational School has been selected by the Federal Board for Vocational Education to give training to ex-service men in various trades.



## Get this Valuable Instruction Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing and should be in the hands of every wood finishing instructor. It is full of valuable information on finishing all wood—soft and hard. Considerable space is devoted exclusively to the finishing of manual training models. This book is the work of experts—illustrated in seven colors.

### How To Get It Free

Go to your best dealer in paints and ask for a copy of Johnson's book "*The Proper Treatment for Floors, Woodwork and Furniture.*" If he cannot furnish this book write us, giving the name of your dealer, and we will mail you a copy free and postpaid.

## JOHNSON'S ARTISTIC WOOD FINISHES

Johnson's Artistic Wood Finishes are particularly adapted for manual training work as they may be applied by the youngest and most inexperienced pupils with good results. Johnson's Artistic Wood Finishes are standard for manual training as they are being used all over the United States and Canada for this purpose.

The perfection of Johnson's Artistic Wood Finishes has been the work of years. You get the benefit of our experience—of our money expenditure—of our knowledge of woods. Our plant is equipped with the best up-to-date mills and machinery and every department is in the hands of experts.

Our line of Artistic Wood Finishes is complete—it includes:

*Johnson's Prepared Wax*

*Johnson's Wood Dye*

*Johnson's Crack Filler*

*Johnson's Paste Wood Filler*

*Johnson's Perfectone Undercoat*

*Johnson's Perfectone Enamel*

*Johnson's Electric Solvo (varnish remover)*

*Johnson's Floor and Finishing Varnishes*

You will find this entire line described and listed in our booklet. Any time specific information is desired, or whenever you want specially finished wood panels, do not hesitate to write us. We solicit correspondence with Manual Training Instructors.

**S. C. JOHNSON & SON, Dept. MT4, Racine, Wis.**

*"The Wood Finishing Authorities"*



Woodworking and mechanical drawing are now thoroly under way at Sebecka, Minn. A large part of last year was used by the woodworking classes in building a shop in the school, making equipment, etc. The work is under the direction of A. Scholz.

—JOHN F. FRIESE.

## AROUND NEW YORK

ON Thursday, Feb. 16, at a conference of the teachers of the three training schools held at the Washington Irving High School, Dr. Gustave Straubenmuller, associate superintendent of schools, compared present-day opportunities to those of the past. "Formerly," he said, "there were elementary schools, high schools, colleges and universities; now we have the vocational schools, pre-vocational, continuation, cooperative, textile and junior high schools." He explained the advantages of the different types of schools, and wanted it clearly understood that the schools are not for defectives, but are intended to give an equal opportunity for education to perfectly normal children.

"A prevocational school is part of an elementary schooling, and is designed to guide a pupil into the course that suits his natural talents best."

The prevocational school gives an intensive six-week training period in carpentry, plumbing, metalwork, electric wiring, commercial lines, etc.

After graduating from a prevocational school, a student may enter a vocational school where he spends two years. "It has been found," said Dr. Straubenmuller, "that the boy who attends a vocational school gets far more remuneration on completing the course than the boy who spent the intervening time in the shop."

He then explained the features of the Textile High School, and the Cooperative High School.

The continuation school service includes vocational guidance, civic responsibility, supplements boy's individual accomplishments and placement.

Extraordinary opportunities for a competent teacher are offered in the junior high schools. "From the first to the sixth grade is a homogeneous group, and from about the fifteenth year on is another homogeneous group, but in between there is a very large group that is not homogeneous. This is the period when a boy begins to write poetry, or gets the idea of running away from home." It is with this group that the junior high school deals.

Children cannot be promoted from the eighth

grade into a junior high school, because the course of study is different from the beginning of the seventh grade. These children are handled by elementary teachers, because they understand children better, and because the elementary teacher is more interested in the child than the high school teacher, who invariably thinks more of his subject.

At the regular bi-monthly meeting of the Continuation School Teachers' Association held Saturday, Feb. 19, addresses were delivered by A. S. Prall, president of the Board of Education, M. S. Stein, chairman of the committee on special schools, and Mrs. Pulitzer of the bureau of vocational guidance and employment of juniors. Mr. Prall stated that continuation school activities are misunderstood by many employers, and also by many city officials, but that nevertheless it is the duty of the Board of Education, and the officials of the city to furnish the money to carry on the activity as the law intended it should be done. He said he took a personal interest in the movement, and declared that he was ready to stand behind the activity with his vote and his voice. Mr. Prall also stated that the success of the movement depended to a large extent upon the individual efforts of the teachers, and forecast that the continuation school would in time become one of the greatest of our educational activities.

Commissioner Stein told of a visit he made to one of the continuation schools, and stated that he was amazed at what he had seen and the interest in the work on the part of the children. He said that the value of continuation school work appeared to him two-fold; first, from the standpoint of general education, and, second, from the standpoint of Americanization. English, elementary arithmetic, history and civics should be considered as very important, and the pupils should also be given what they failed to get in the elementary schools. Americanization work, Mr. Stein said, should be based upon the proposition that every American citizen has duties to perform as well as rights to demand, and that these rights are dependent on duties rather than the reverse. The purpose and functions of the departments of the government should be made clear to the pupils, who in turn should pass this knowledge on to their parents.

Mrs. Pulitzer spoke of her work in placing children between the ages of fourteen and eighteen, and of the supervision needed, and for those children who leave the elementary schools in the seventh and eighth grades, she heartily endorsed the continuation schools.

Thirty-five candidates recently took the examina-



MANUAL TRAINING BENCH No. 1905. Accommodates four students at a time.

Aside from the influence upon your teachers and students, Manual Training Equipment of superior quality and attractive appearance is a good advertisement for your school. Why should not a school give as much thought to the quality of its equipment and the appearance of its work rooms as a modern manufacturer?

# *Kewaunee* Manual Training Desks

Represent the highest achievement in the art and science of manual training equipment. They are on a par with Kewaunee Scientific Laboratory Equipment.

Educational Executives who are considering new equipment should have a copy of the Kewaunee Book. Just ask for it.

Address all inquiries to the factory at Kewaunee.

Pacific Sales Division:  
6th Floor  
Metropolitan Building.  
Los Angeles, Cal.

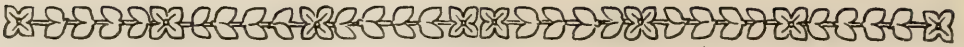
*Kewaunee Mfg. Co.*  
LABORATORY FURNITURE EXPERTS  
111 LINCOLN ST.

New York Office:  
70 Fifth Avenue

**KEWAUNEE, WIS.**

BRANCH OFFICES:

CHICAGO	ATLANTA	DALLAS	KANSAS CITY	SPOKANE	MINNEAPOLIS
COLUMBUS	ALEXANDRIA, LA.	LITTLE ROCK	DENVER		
OKLAHOMA CITY	JACKSON	TORONTO, CAN.			



## FIELD NOTES—(Continued)

tion for license as teacher of shopwork in the elementary schools of New York City.

—W. H. DOOLEY.

### SOUTHEASTERN ITEMS

**FLORIDA** has long been known for its famous winter resorts, fishing camps, and fine fruits; but little has been said about many other things that are being well done in that state. There is a strong indication of a thirsting after trade knowledge when reports of evening classes under Smith-Hughes regulations show 100 per cent attendance for the course.

Large numbers of people migrate to the extreme Southeast due to the attractive winter climate, and consequently many of the cities have broadened their educational facilities by the introduction of industrial and vocational work.

Jacksonville has put on an excellent program, and is expanding just as fast as local conditions will permit. R. G. Sawyer, supervisor of the industrial and trade work, reports the following lay-out of the work:—Wood work is offered from the sixth grade up. This plan is not ideal, but owing to the present school organization, it can not be avoided. A new junior high school building is being planned for the near future. There are twelve completely equipped grade school shops for the white boys and one for the colored. Each one of the larger schools has its own shop; this eliminates the traveling of the students, but requires a teacher to care for two shops. C. E. Saunders, J. H. Gabrielle, K. G. Eldridge, E. R. Moery, L. C. Rose and H. U. Besse handle the grade work in the white schools, and H. C. Calhoun that of the colored.

The high school work is organized into three departments. W. F. Bricker has charge of the drawing; W. C. Studdiford, woodworking, and W. S. Humphrey, metalwork.

Mechanical drawing can be taken thru the four years if desired, the last two years being devoted to either machine design or architectural drawing. The woodwork covers two years, and takes up the regular lines of elementary benchwork, cabinet, and case construction. The metalwork covers two years with possible advanced electives. The first year is devoted to machine shop work, and the second to automobile work. The machine shop was installed this year.

The work is planned, not along new lines, but along, what they consider, the better lines. Two years work is required for credit; a boy must take one year each of drawing, woodwork and metalwork, and the remainder is elective. Students

work in both wood and metal shops the first year as well as in the drawing room. The aim is to have the student complete the work in the first two years; leaving the last two years for specializing in a department or college entrance preparatory work.

A part-time school has been put into operation. W. R. Sheel is employed for this work, and he uses other local help as needed. Florida does not have a part-time law, and the attendance can only be held by the interest of the students. The boys working on permit are in attendance at this school as well as groups of boys from over the city who desire to take the work. All the work in this school is "general continuation" at present. About fifty boys attend the part-time school for four hours each week. The course consists of English, mathematics, civics, hygiene, drawing, woodwork, and metalwork.

No day trade school has been started, but very satisfactory trade extension night classes are in operation. Ten teachers are employed for this work, and the subjects covered are as follows:—roof framing, blueprint reading, and architectural drawing for carpenters; auto mechanic, and auto electric work for automobile mechanics; theory, and lead work for plumbers; codes, and practical electricity for electricians; mechanical drawing for machinists; and arithmetic for all trades. The enrollment will average fifteen for each class, and all classes are planned for twenty-four lessons.

Goldsboro, N. C. has had a full-time instructor for manual training since the beginning of the year. All four years of the high school are devoting eighty minutes on alternate days to drawing and shopwork. This "down east" town is near the coast and in the lumbering region. Row boat building and problems fitting the local and individual needs are given a prominent place in the shopwork. Lowell B. Selby is in charge.

—FOREST T. SELBY.

### WESTERN ARTS ASSOCIATION

**T**HE annual meeting of the Western Arts Association, formerly the Western Drawing and Manual Training Association, will be held May 3-7 at Peoria, Illinois, and promises to be of unusual interest. Railroads are offering reduced rates; Peoria is making cordial preparations; there will be space for commercial as well as educational exhibits; and a general good time is promised.

#### THE PROGRAM

The keynote of the entire Program is to be "The needs of Society in the field of Art." The leading



# STOUT INSTITUTE

Summer Session June 27—August 26, 1921

The following courses are offered

## VOCATIONAL EDUCATION—7 Courses

For directors and teachers of State and Federal aided Vocational Schools

Administrative Problems	Principles of Education	Teaching Vocational and Industrial
Citizenship for Vocational Schools	Principles of Teaching	Classes
Organization of Home Economics		Vocational Education

## INDUSTRIAL ARTS—28 Courses

For teachers and supervisors of Industrial Arts and Manual Training in elementary and secondary schools junior and senior high schools and for Vocational School teachers.

Auto Mechanics I, II	Carpentry	Machine Shop I, II, III
Bricklaying and Cement	Electrical I	Millwork
Drawing	Elements of Woodwork	Patternmaking
Architectural I, II	Forging I	Printing I, II
Elements of Mechanical Drawing	Forging II (Incl. Oxy-Acet. Weld.)	Sheet Metal I, II
Machine Drawing I	Foundry	Woodfinishing
Machine Drawing II	Furniture Upholstery	Woodturning
Cabinet Making	Grade and Prevocational Woodwork	

## HOUSEHOLD ARTS—26 Courses

For teachers and supervisors of Household Arts for dietitians and for institutional directors.

Chemistry	Clothing I, II, III, IV	Home Nursing
Food	Cookery V (Experimental)	Household Physics
Textile	Dietetics I, II	House Management
Qualitative Analysis	Dressmaking and Drafting (Adv.)	Institutional Management
Color and Design II	Food Analysis	Interior Decoration
Clothing I, II, III, IV	Food Study	Microbiology
Costume Design	Home Marketing, Cookery and Sewing	Textiles
Community Hygiene		

## DEGREE AND DIPLOMA ACADEMIC WORK AND SCIENCE—18 Courses

For Stout two-year course graduates and others studying for the Bachelor of Science degree in Industrial Arts or Household Arts and for those studying for the diploma.

English III	History, Modern	Psychology I
English IV	Modern Industry	Psychology II
Home and Social Economics I, II, III, IV	Materials of Construction	Psychology, Child
History, Industrial	Mathematics I and II	Public Speaking
	Physics I	Sociology

## PHYSICAL TRAINING—5 Courses

For athletic coaches and others interested in athletic games and swimming.

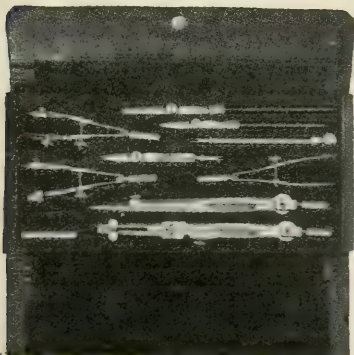
Athletic Coaching	Basketball	Swimming for Men
Football	Track and Field	Swimming for Women

For catalog address

L. D. HARVEY, Pres.

STOUT INSTITUTE

Menomonie, Wisconsin



## Mechanical Drawing Outfits

At Special Wholesale Prices

Set of Instruments as per Photo \$6.65

We have now only a limited number of sets to offer at the above price—Do not delay your orders—act now—and save 200 per cent—*While they last*—Construction of solid nickel silver and steel. Pocket case 8½ inches by 4 inches lined with green velvet. Send for catalog and prices on smaller sets, etc.

**National Instrument Company**

4517 North Lawndale Ave., Dept. M., Chicago, Ill., U. S. A.

# Teach Shoe Repairing TO WORK TO SAVE TO EARN The Triple Training



THE picture tells the story. It shows the personal benefit to the student in the comfort of better shoes and the saving in expense with the added training.

ONLY a small low cost equipment is required.

YOU can teach shoe repairing in your school—it requires less space than other forms of manual arts.

*Write for full information*

**Shoe Repair Supply Co.**  
Peoria, Illinois



## FIELD NOTES—(Continued)

speaker will be Dr. Ross L. Finney of the Department of Sociology, University of Minnesota, who will present the fundamental bases of the art needs of society from the standpoint of the sociologists.

Dr. Charles A. Prosser, director of Dunwoody Institute, formerly Federal Director of Vocational Education, will make the more specific applications of the needs of society for more and better art in the fields of industries and industrial education.

Rilla Evelyn Jackman, director of art Department of Teachers' College, Syracuse University, will present a new phase of art application in her illustrated lecture "Our modern American coins and their designers."

It is hoped that Mr. Eggers, Director of the Art Institute, Chicago, and Dudley Crafts Watson, Director of Milwaukee Art Institute, will appear on the program. Plans are being made to have speakers from the fields of advertising, dressmaking and millinery, furniture making and metalwork, present the needs of these fields for more specific training in Art. There will also be illustrated talks showing the plans for more community art, as worked out by the Art Extension Committee of the University of Illinois.

In addition to the general program, the round table meetings will be of great interest. The departments with their chairmen are as follows: Manual Training, Albert G. Bauersfeld, director of industrial education, Chicago Public Schools; Vocational Education, Professor George F. Buxton, Indiana University; Art, Miss Jean Corser, Cleveland, Ohio; Home Economics, Miss Jenny H. Snow, Superintendent, Household Arts, Chicago Public Schools; Printing, H. W. Gossett, Indianapolis.

## THE EXHIBITION

During the meeting time will be devoted to the study of the exhibition, which is being developed along slightly novel lines. The exhibition Committee, of which Miss Adelaide Mickel of Bradley Polytechnic Institute, is Chairman, is planning a concentrated exhibit, balanced between the special interests of the various departments of the Association, and illustrating significant sequences of problems, rather than typical examples of all the kinds of work accomplished. It is hoped that the preliminary bulletin of the Association (mailed on request by L. R. Abbott, Grand Rapids, Michigan), will stimulate a great many teachers to send 16-mount exhibits showing the logical development of some problem in which they have been achieving notable results. These exhibits will be signed with the names of the instructors who inspired them,

# Manual Training Magazine

APRIL, 1921

## NEW VISIONS AND THEIR FULFILLMENT

CHARLES A KING

State Normal School, Plymouth, N. H.

DIFFERENT types of mind and of mental trend react differently to established conditions. The ultra conservative will contend that the present is ideal, the result of the accumulated knowledge and experience of the world; he is satisfied, hence can see no need for improvement, and is firmly convinced that it is best to leave well enough alone. To the dreamer, the scientist and the thinker, experiences of the past are but rungs in the ladder of progress, valuable only so far as they aid in the solution of new problems; and present conditions simply furnish opportunities for the gathering of new knowledge of every aspect of the ever-broadening field of human activity. The mass of people between the two extremes are content to drift with the stronger influence, with a tendency to stick to the old and tried, not actively defending it, but the habitual following of the line of least resistance is typical of the average mind.

Loyalty to the old is a natural human attitude, and were it not for the men and women of vision of past generations, humanity would still be living in caves and eating uncooked food. When a vision of our prehistoric ancestor suggested that the use of a sail would save him the labor of paddling, no doubt his relatives of the older generation chided him for thinking he could improve upon their greater experience and wisdom, and predicted disaster from such a new-fangled idea. Probably beneath his breath he called them the primeval equivalents of moss-

backs, old fogies or back numbers, and eventually had the satisfaction of seeing them gladly accept the new mode of travel. His experience was like that of others who, thruout the ages, have inspired the great steps in human progress. Had it not been for Gutenberg's vision of printing, Watt's vision of the possibilities of steam, and Franklin's vision of electricity, our methods of transportation and communication would still be those of Abraham, Isaac and Jacob. Many men living today can remember the ridicule heaped upon Bell's vision of the telephone, but now we hesitate to say anything cannot be done, for how many times has this been said, and some one has accomplished the apparently impossible. In other words the civilized world is developing a wholesome respect for visions which look beyond the present to a better future. This respect is functioning efficiently in material development, but it is slow in recognizing or admitting the possibilities of scientific study and research in the field of education. Tho the trying out of the visions of modern educators has resulted in many substantial improvements in scientific treatment of the child, it is difficult to reduce the results to material form which can be understood by those who have never experienced the vision of the new ideals. It is hard to educate a mass of adults to enthusiastically adopt a new viewpoint so radically different from their preconceived ideas as the difference between the old and new ideals and methods of education.



Few people hesitate to adopt obvious improvements in their own particular interests, but many lack vision to understand that in other lines of work there may be opportunities for improvement equal to, and perhaps more revolutionary, than in their own; this is conspicuously true of education, for the average middle-aged layman instinctively harks back to the educational ideals of his youth and his comparisons are usually unfavorable to the new. It is forgotten that while every other interest in life is changing and broadening in ways not visible to one from the outside, education is undergoing the same processes. The physician, lawyer, preacher, merchant or manufacturer, or walker in any path in life who continues to practice the methods of the past generation is left hopelessly behind; so the teacher still holding to the ideals and methods of the last generation has gone to seed quite as much as one in any other walk in life; in fact, in no aspect of life has there been more revolutionary discoveries affecting its fundamentals than in the teaching profession thru new developments of psychophysiology. Never before has it been possible for the educator to approach problems of education with the intelligence which is now assembled and organized for wise application.

Perhaps the main reason why modern educational ideals and methods fail to receive enthusiastic support from the popular mind is because scientific research and investigation points unmistakably to the fact that the older education is wrong in certain of its fundamental conceptions. Instead of the bookish education, based upon memory training ideals, the modern educator would cast aside many of the textbooks and deal with the concrete things themselves. He would aid the children to learn how to do things, not simply to be told or to

read about them; he would teach the child to think out problems for himself; he would create an environment in school which would so appeal to the child that he would rather be there than anywhere else. He would teach the child things he will find individually useful in his life, rather than those which will be of no value unless he follows a narrow range of interests, and which will be practically useless when away from this range. He would economize the time of the student and of the school system by teaching each student so his school work will fit in with his individual mental trend, developing him to the highest possible efficiency and giving him a basic preparation for the type of occupation he will probably follow in adult life.

All modern educators agree that the result of research and empirical activities indicate that handwork is the center around which should be grouped the class work of the elementary schools, as only thru handwork has it been found possible to correlate the scholastic work of the school with the problems of life, and to adapt the school work to reach the different types of mind most efficiently. Only by handwork can the student be taught to apply reflective thought accurately, not thru memorizing of rules, but by logically fitting each item of information into its proper relation to the subject in hand, thus completing the triangle of impression, association and expression, and co-ordinating the afferent, the associative and the efferent mental processes which is necessary before any sensation or thought can have its maximum result upon individual mentality.

The educator who lacks the vision of the new ideals defends the conservative conditions of education by well rounded sentences regarding the "higher realms of thought," "education for education's sake," "the well-filled mind," and other

unassailable platitudes. These are equally applicable to the old and the new education, but the different visions of the older generation of educators and of the modern permits widely different interpretations of them. The defenders of the traditional formal viewpoint side-step definite statements of the newer vision; for example, Pyle, has said, "We must not lose sight of the fact that muscular development is not only the condition of mental development, but the end as well. There seems little reason, ultimately, why we should know, except that we may do. . . . The sharp distinction and separation of mind and body in the past has been a great error." Also Tyler maintains that "The hand was intended to be used as the servant of the planning mind. Their centers in the brain stand in the closest relation with the highest areas of thought. Thus anatomy teaches that manual exercise cannot fail to develop mental power." To these may be added Dewey's statement that "Information merely as information, implies no special training of intellectual capacity." Numberless other similar statements have been made by men with the new vision, but the big thought to be grasped is that these direct statements have brought neither defence nor refutation based upon a scientific knowledge of the working of the human mind.

Without the vision of the new we would think that the new ideals of education led away from high thinking, which until recent years has been almost universally assumed to mean the formal repetition of thoughts of the philosophers and thinkers of the past, and to consist of abstract thought and of purely mental imagery, far removed from the sordid affairs of daily life; this was a sort of mental glorification outside of, but not as might be thought, beyond the range of the mental ability of the masses whose

education did not include the classic and purely scholastic subjects. The modern educator holds that the same degree of reflective thought applied in solving present problems, in delving into the secrets of nature and of the human mind holds within it the possibilities of glorifying the most practical problems faced by humanity, and makes the study of them worthy of the highest mental and physical type.

But the most essential evidence of the lack of vision is that the old education insisted that the child's mentality should be judged by his ability to master the scholastic subjects. The fact that there were different types of mind was considered irrelevant, for a student was either bright or stupid in direct ratio to his ability to conform to the formal curriculum and methods. On the other hand the new education recognizes the different types of mind and the educational economy of giving each the training to which it is adapted, for only by methods which will arouse his interest is it possible to develop the child into the most efficient adult, and, to state the object of education briefly, it is to prepare the child for life. Within this brief statement lies an essential difference between the old and the new, for it includes the vision of the result to be obtained. The ideal of the old education was to train the brilliant child to get the most out of life for himself, believing that what was best for such a boy would be best for all, while the ideal of the new is to so train each child that he will be of the greatest possible use to humanity, considering his mental and physical limitations, believing that what is best for all, will in the final analysis be best for each individual.

All knowledge of value to humanity ends in muscular activity, hence thru muscular activity may knowledge be best

attained, for in the natural correlations and coordinations existing between muscular activity, the material world and mental processes involved, we have the basic triangle of human progress: mind, muscles and material. The conception of lay individuals of this triangle depends upon their preconceived ideas of the value of the new methods; their views have an important bearing upon educational progress, as most people still in the prime of life receive their education before modern ideals had earned the respect and the attention, and had the force they have today.

Among the men composing the school boards which control the destinies of the school systems largely tied up with politics are men from every walk in life, with ideas of education emanating from their individual interests and experiences. The manufacturer is likely to look at handwork in the schools as a possible source of supply for help in his factory; he believes that handwork should be "practical," and that "culture" for the future workman is not essential. Usually the merchant considers that commercial arithmetic and related subjects should be the center of the school activities, and feels that the study of the classic languages and literature is the only way to attain culture. The professional man who has kept up his college classics and literature is likely to look upon modern educational ideals as a regression from true culture, and to feel that if a student has not the type of mind to grasp the traditional studies he is irrevocably destined to be a hewer of wood and drawer of water, and as such it makes little difference whether he is educated or not. Generally this type of man is considered the ideal for school board membership because he is recognized in the community as being highly educated, but in many cases his lack of vision makes him the

chief obstacle to educational progress, for with his self satisfaction, and preconceived ideas of education there is small likelihood that he will easily experience a change of heart. On the other hand this man, if he has the vision, may become the main stay of the enthusiastic superintendent. Then there is the political school board member who is appointed for political reasons, or as a consolation for defeat in another office. He knows little of education and sometimes is modest enough to realize it; he shines upon occasions when the school board is the recipient of honors. He is likely to form his opinions second hand from the professional man above mentioned, or from another influential member. When in doubt, there is always the question regarding the influence of the proposition upon taxes, but in any event, upon any school board he may hold the balance of power. Thus we may appreciate the difficulty often experienced by a progressive superintendent in persuading a school board of this type to sanction a strong movement in the direction of the new ideals, and it is a deplorable fact that such conditions of school government still exist.

Often a school board will sanction a small beginning in handwork, but is reluctant to go farther. This is enough to allow their school system to claim to be up-to-date, but may be of little more benefit, altho an excellent exhibition of the products of the manual arts department may be an annual feature of the school system, for unless the entire system is correlated to work harmoniously, much less than the maximum of efficiency will be realized.

The school authorities of many small cities, towns, and rural districts need the vision which will spur them to include new methods and ideals. Many such schools apparently exist for the sake of



giving an opportunity for old teachers to earn their living; the idea that the schools exist for the sake of the students seems never to have found lodgment in the municipal intelligence. It is as true in education as in other walks in life that the cogs which do not mesh properly in the wheel of progress must be removed to make room for others that will. Under such conditions the new superintendent must burn deep, and he will be an individual of rare tact and ability if he can bring about the desired reforms without getting badly scorched himself in the process.

The superintendent and teachers of vision who can weather the breakers incident to launching new educational ideals and methods will soon have their reward in the changing public sentiment. Children will develop a sudden interest in studies which the methods of up-to-date teachers have led them to see, have a real and easily understood function in their every-day lives, and that there is so much pleasure to be found in certain subjects at school that they are willing to do their best in the less interesting subjects for the sake of the work they enjoy.

In the larger centers of population the vision of the educational Cannan has been the basis of school work for more than a quarter of a century. The smaller cities and many towns have gradually experienced a glimmer of the vision thru the continual changes in their teaching force, as these teachers have made good and been called to larger positions, thus making an opportunity for another young and enthusiastic teacher to leave the

impress of vision. The accumulated effect has been that in the villages throughout the country there may be found normal trained teachers conducting handwork in a modest but in a distinctly worth-while way. Even in isolated rural schools the enthusiastic teacher has found that it is possible to correlate and coordinate the elementary school subjects with simple handwork which can be carried on with available tools and materials. Thus the vision is being realized in remote parts of our country, and the time is fast approaching when the public mind will be of the type formed by contact with modern educational methods.

The accumulated knowledge of the child's mental processes and growth is becoming more and more specialized and organized for application, and it will not be many years before the children themselves will obtain the vision of the good things the school can give them. The advantages will far outweigh the necessary but unobtrusive restraint of the schoolroom, for the modern teacher of children will know how to apply methods of high efficiency in teaching the child the irksome subjects by tying them up with his interests. He will also know how to create interest, not for the sake of sugar-coating an educational pill, or to make the child contented by permitting him to amuse himself aimlessly, but because he knows that only thru interest can the child learn most efficiently, for interest is the only lubricant of educative process which the teacher can be sure will result in the eager application of the most incorrigible pupil.

*The existence of the right type of manual training courses affords to vocational education courses an auspicious start, and prevents much waste of time and effort in the strictly vocational work.*

—W. G. HUMMEL.

# HOUSEHOLD MECHANICS IN THE DETROIT PUBLIC SCHOOLS

EARL L. BEDELL

Instructor, Northwestern High School, Detroit, Mich.

THE problem of replacing the eighth grade manual training with a course in Household Mechanics has been worked out carefully during the past four years. Several committees of teachers have been actively engaged in solving this problem. During the school year of 1918-19, *four* centers were offering this new course; this number increased to *fourteen* centers during the past year; and equipments have been ordered for *twenty additional* schools for the coming year.

The purpose of this course is (1) to present a study of the structure of a modern dwelling-house, and of the materials used in its construction; (2) to teach the use and maintenance of all household appliances, to the end that the students may contribute to the efficient use and operation of these appliances, involving various kinds of minor repairs.

## THE COURSE OF STUDY

The course of study in household mechanics has been formulated by compiling the suggestions of those who have been teaching various aspects of the work during the past two years. When one stops to consider the great number of trades involved in erecting and equipping a modern house, one may appreciate the problem of selecting those topics which will best show how to maintain a modern house and operate all the mechanical devices in it. After carefully weighing the relative value of different possible topics and shop exercises, the following outline was gradually evolved. These topics have been arranged in what seemed to be a logical order, but there is no reason why any group of related topics cannot be taught at any time during the year.

The course of study has been arranged

in diagram form, in order to show to the teacher in a comprehensive way the entire course at a glance. See chart. It is ruled into five columns, headed as follows:—

*First*—PROBLEMS TO BE SOLVED.

Under this head is placed the topics selected for the course.

*Second*—NOTES, SKETCHES, and REFERENCES. Under this head are placed suggestions for note-book work, references to drawings made to illustrate the topic, and explanatory lesson sheets; references to texts and catalogs are also listed in this column; or in other words, this column contains directions on how and where to find information on the topic.

*Third*—SHOP PROBLEMS. Under this column are listed shop exercises or jobs which will give the pupil actual practice work. These shop problems may be practice problems, or they may be actual repair or construction jobs done for the school or the home. It is expected that the pupil will have studied the references, drawings, etc., listed in Column 2 before beginning his shopwork.

The last two columns are placed under the general heading—"Objectives and Standards."

*Fourth*—FACTS TO BE LEARNED. Under this column are placed the important facts which the pupil should have learned if the references have been studied.

*Fifth*—POWERS TO BE ATTAINED. This column emphasizes the aims of the work from the point of view of the manipulations involved,—that is— the actual power to solve the problem by *doing the work*.

## TIME DEVOTED TO THE WORK

This course extends over a period of one year, the class meeting once each week, for a ninety-minute period. The time is roughly divided into two equal parts; the first half of each period is devoted to intensive study of a topic, the last half to shopwork. A great deal more time could profitably be devoted to the course without increasing the subject-matter.

## CLASS MANAGEMENT

It has been found convenient to divide classes into small groups, the boys in each group working together on similar shop problems. This arrangement (into groups) is necessary on account of the limited equipment for the teaching of each topic. After a few topics have been explained and taught, the groups will rotate about the shop, each group getting an opportunity to solve all of the shop problems. This organization (into groups) gives the pupils opportunity to bring jobs from home; the same credit is given for work done on materials brought from home as for work done on practice material furnished in the shop.

Several methods have been successfully worked out by the teachers for giving the pupils credit for the work they accomplish. A card, on which all the shop exercises were named, has been used to record the work, each pupil having a card punched for each completed topic. Promotion to the foremanship of a group has been made an incentive for good workmanship.

## WHAT THE PUPILS HAVE DONE

The following list of things accomplished during the last term, by the pupils in one of the school shops, has been reported by the teacher; it is certainly suggestive of the possibilities of the course:

4 Leaking mop pails soldered for the janitor.

2 Mortise locks fitted on the school lunch room door.

6 Cupboard doors made and hung on school cupboard.

1 Desk lock repaired for a teacher.

5 Table lamps wired complete.

4 Vacuum cleaner motors repaired. The brushes were replaced in all cases.

9 Lawn mowers sharpened.

26 Miscellaneous kitchen knives sharpened.

41 Miscellaneous jobs of soldering on utensils and toys.

The jobs done at home include the repairing of leaking faucets, leaking flush tanks, cleaning traps, replacing broken window glass, repairing door-bell systems, adjusting doors which did not swing, fixing washing machines and vacuum cleaners, sharpening knives, etc. One parent reported: "The work has had a surprising effect on George. He spends his playtime working at the different things about the house; he seems to take great pleasure in fixing things up around home."

## THE EQUIPMENT

Household mechanics is taught in the same room as the regular manual training work; practically the same equipment is used. There are added, however, three soldering outfits; some common plumbing fixtures are set up on one side of the room; a small amount of electrical equipment (for bell wiring and extension cord wiring) is furnished; and a representative lot of builders' hardware is available for demonstrating its use. A complete list of the equipment is attached.

Textbooks, catalogs and the "City Building Code" comprise the private library of the room.

Examining houses in the process of construction is an important source of information.



# DEPARTMENT OF INDUSTRIAL DETROIT

## DETAILED OUTLINE COURSE OF STUDY, HOUSEHOLD MECHANICS

### TEACHING DEVICES

PROBLEMS TO BE SOLVED	NOTES, SKETCHES AND REFERENCES	SHOPWORK
1. BUILDING MATERIALS	Examine samples of building material, discuss their prices and uses. The note-book should contain a list of materials—how measured and their price. Ref.—Lesson Sheet I; Kidder, "Architectural Handbook;" catalogs.	1. Scale lumber. 2. Write a lumber order. 3. Make an exhibit of hardware used in constructing a house. (class problem)
2. THE BUILDING STRUCTURE	Lesson Sheet II.	1. Build a model to show the parts of a house. (Class problem).
3. THE CITY BUILDING CODE	"Building Code" may be obtained at Municipal Building. Note-book should contain special points in connection with house building. A complete set of plans for a small house would be of value. Ref.—Lesson Sheet III; Kidder, "Architectural Handbook;" "The City Code Book."	1. Measure rooms and compare with "Code" requirements: (a) Windows. (b) floor area. (c) height of ceilings. (d) yards.
4. HOW TO KNOW A WELL BUILT HOUSE	Class discussion on the things which make a good home. Visits to houses being constructed. Ref.—Lesson Sheet IV.	1. Examine a house and report on its good and bad points. (Home work).
5. SHARPENING TOOLS	Ref.—Lesson Sheet V; Allen's "Manual Training," pp. 90 to 116; Disston's "Why a Saw Cuts" (furnished free of charge by the Disston Company).	1. Sharpen a bevel-edged tool. 2. Sharpen a knife. 3. Set and file a saw. (Optional). 4. Sharpen a lawn-mower.
6. SOLDERING	Put directions for soldering and making things in the note-book. Sketches; blueprint 6 and 6A. Put in note-book sketches for original work.	1. Tin a soldering copper. 2. Mend a leaking utensil. 3. Make a cup, scoop, cookie-cutter or match-box from a tin can.
7. GLAZING	Give practice work in glazing. Ref.—Lesson Sheet VII; Kidder's "Architectural Handbook;" "The Story of the Manufacture of Glass."	1. Make putty by mixing whiting and linseed oil. 2. Glaze a sash. 3. Make an exhibit of different kinds of glass in common use.
8. NAILS AND SCREWS	Ref.—Lesson Sheet VIII; Catalogs; Kidder's "Architectural Handbook," p. 1443.	1. The correct use of nails and screws on any problem being constructed. 2. Prepare an exhibit of nails and screws commonly used. (Class problem).
9. PAINTS AND VARNISHES	Put in the note-book directions for painting. Ref.—Lesson Sheet IX; Paint catalogs; Kidder's "Architectural Handbook."	1. The refinishing of furniture, or the finishing with paint or varnish of any work the pupil may be constructing.
10. LOCKS	Pupils may bring locks to repair. Blueprint No. 10. Ref.—Lesson Sheet X; catalogs.	1. Set a mortise lock. 2. Reverse a mortise lock. 3. Set a hasp and staple for pad-lock. Set a chest or drawer lock. 4. Minor repairing on locks.

## AND MANUAL ARTS PUBLIC SCHOOLS

LENGTH OF COURSE, ONE YEAR, TWO HOURS PER WEEK

### OBJECTIVE AND STANDARDS

#### FACTS TO BE LEARNED

#### POWERS TO BE ATTAINED

Names of, and how to order the materials commonly used in house building.

The ability to order and to specify materials used in the maintenance of a house.

Know the name of all parts of the building, and the particular name of the material used.

Ability to designate any part of a house by its correct name.

Procedure necessary to get a permit to build a new building or an addition to an old one.

Ability to conform to the law regarding building.

Know the characteristics of a good house.

Ability to discriminate between good and poor house construction.

The purpose of a grinder, grindstone, and oilstone. The method of sharpening bevel and wedged tools, saws, and lawn-mowers.

The ability to sharpen any cutting tool in common use.

The kind of flux to use.  
How to tin a soldering copper.  
How to run a seam.

Ability to solder a seam or mend a broken part.

How to mix putty.  
Glaze a sash.  
Remove a sash from a window frame.

The ability to replace a broken window glass with a new one.

Sizes and kinds of screws and nails.  
Methods of using screws and nails.

Ability to use nails and screws correctly.

The composition of good paint.  
Use of drier.  
Principles of painting.  
Staining and filling wood.  
Refinishing—Varnish removing.

Ability to paint and varnish.

Kinds of locks.  
Method of setting locks.  
Mechanism of locks.

Ability to set locks and to make minor repairs.

11. HINGES	Ref.—Lesson Sheet XI; catalogs.	1. Set a surface and butt hinge. 2. True a door by using shims.
12. FURNITURE REPAIR	Ref.—Lesson Sheet XII; (Lesson Sheet IX, for Refinishing).	1. The class should be prepared at all times to make minor repairs to school furniture. 2. Pupils may bring broken furniture from their homes to repair.
13. THE WATER SUPPLY	Blueprint No. 13. Ref.—Keene, "Household Mechanics" p. 87; Lesson Sheet XIII.	1. Read a water meter.
14. THE RANGE BOILER	Blueprint No. 13; illustrate by diagram connections for a range boiler. Ref.—Keene, "Household Mechanics," pp. 115 to 124; Lesson Sheet XIV.	1. Set up an experiment to show the circulation of warm water.
15. FAUCETS	Blueprint No. 15. Sketch repair parts for fuller faucet; compression faucet. Ref.—Keene, "Household Mechanics," p. 90; Lesson Sheet XV.	1. Replace the packing and the gasket in a compression faucet. 2. Replace the packing and the washer in a Fuller faucet.
16. SEWAGE DISPOSAL	Blueprint No. 16. Ref.—Keene, "Household Mechanics," p. 103; Lesson Sheet 16.	
17. TRAPS	Blueprint No. 17. Ref.—Keene, "Household Mechanics," p. 103; Lesson Sheet XVII.	1. Clean a trap. 2. Set up an experiment to show siphonage.
18. THE FLUSH TANK	Blueprint No. 18. Ref.—Keene, "Household Mechanics," p. 111; Lesson Sheet XVIII.	1. Clean and assemble the supply valve. 2. Replace the rubber ball stopper. 3. Adjust the trip and the copper ball float.
19. ELECTRICITY	Blueprint No. 19. Ref.—Weber, "Electrical Construction;" Keene, "Household Mechanics;" any text in elementary physics; Lesson sheet XIX.	1. Make an electro-magnet. 2. Make a cell. 3. Make a Western Union. 4. Make a branch tap.
20. ELECTRIC BELLS	Blueprint No. 20. Ref.—Keene, "Household Mechanics," p. 342; Weber, "Electrical Construction" p. 47 to 67. Lesson Sheet No. 20.	1. Wire one button to ring one bell. 2. Wire one button to ring two bells. 3. Wire two buttons to ring one bell. 4. Wire several buttons to ring as many different bells.
21. HOUSE WIRING	Ref.—Kidder, "Architectural Handbook," pp. 1371 to 1399; Lesson Sheet XXI; Weber, "Electrical Construction," p. 69.	1. Test and replace a fuse.
22. THE INCANDESCENT LAMP	Sketch lamps in series, lamps in parallel. Ref.—Keene, "Household Mechanics," p. 308; Lesson Sheet XXII.	1. Wire two lamps in series. 2. Wire two lamps in parallel. 3. Make an extension cord.
23. HEATING BY ELECTRICITY	Ref.—Keene, "Household Mechanics," p. 326. Lesson Sheet 23; catalogs.	1. Overhaul an electric flatiron. 2. Build a toaster using the resistance wire taken from an old heating element.
24. MOTORS	Ref.—Keene, "Household Mechanics;" Weber, "Electrical Construction;" and text in elementary physics; Lesson Sheet 24.	1. Replace a worn brush on a motor. 2. Make a small motor.



Sizes and kinds of hinges. Hanging doors. Adjusting doors by placing shims under hinges.	Ability to hang a door.
Fastening with glue, screws, angleiron, etc. Kinds of joints in furniture construction. Refinishing.	Ability to make minor repairs on furniture.
How the water is supplied. Valves and their purpose. Location of water pipes.	Ability to locate trouble in the water line.
The circulation of warm water. Connections for a range boiler. Methods of heating water.	
Types of faucets. Specification of faucets. Repairing faucets.	Ability to repair any faucet.
The sewer and its parts. Ventilators and their use. Cleaning drains and sewers.	Ability to keep the sewer in a sanitary condition.
Purpose of traps. Kinds of traps. Ventilating traps. Cleaning traps.	Ability to keep the traps in a sanitary condition.
Mechanical construction of the flush tank. Purpose of the flush tank. Making repairs and adjustments.	Ability to keep the flush tank in working order.
Current, amperage, voltage, resistance, conductor, insulator. The use and construction of an electro-magnet. The dry cell and connections for a battery. Wiring.	Ability to use electricity in the home.
The electric door bell construction. Current supplied by cells or transformer. Bell wiring problems.	Ability to keep a bell wiring system in working order.
Principal parts of a house wiring system; conduit, wires, switches, fuse and fuse-block, and circuits. Load on a circuit. Licensed work. Wiring permits. Underwriters' Assn.	Ability to use electricity in the home.
Kinds of incandescent lamps. Quantity of current consumed. Methods of connecting lamps.	Ability to specify the lamp needed for a particular place; to make an extension cord.
General principles of electrical heating. Electrical heating elements in common use.	Ability to keep in working order electrical heating elements.
The armature, field, brushes, and commutator. The rating of a motor; current consumed, horse power, proper load. Lubrication.	Ability to operate a small motor and keep it in running order.

25. FUEL AND THE PRINCIPLES OF HEAT DISTRIBUTION.	Ref.—Keene, "Household Mechanics," p. 182; p. 250.	1. Clean a gas burner and adjust the air mixture.
26. THE HOT AIR FURNACE	Ref.—Keene, "Household Mechanics," p. 51.	
27. THE STEAM HEATING PLANT	Ref.—Keene, "Household Mechanics."	
28. THE HOT WATER HEATING PLANT	Ref.—Keene, "Household Mechanics."	
29. THE REFRIGERATOR	Ref.—Lesson Sheet No. 29.	

Household mechanics seems to help to fill a long-felt need for greater variety in the manual training instruction in the intermediate grades.

During the past two years while the work in household mechanics has been in operation, there have been no objections from pupils, parents, or teachers. On the other hand, the teachers have received many expressions of approval from parents. The work offers unlimited opportunity—in increasing the pupils general knowledge, and in encouraging a closer relation between the school and the home.

### STANDARD EQUIPMENT

#### BUILDERS HARDWARE

- 1 doz. pr. Butts, ball tipped pins, 3"x3".
- 1 doz. pr. Butts, loose pin,  $\frac{3}{4} \times 1\frac{7}{16}$ ".
- $\frac{1}{2}$  doz. Catches, cupboard; German bronze.
- 1 Hasp, safety, 4 $\frac{1}{2}$ " galvanized, wrought.
- $\frac{1}{2}$  doz. Hinges wrought ornamental, 3 $\frac{7}{8}$ " corrugated (Butterfly).
- $\frac{1}{2}$  doz. Lock set, mortise, for inside door, japanned iron case, 3 $\frac{1}{2}$ "x3 $\frac{1}{4}$ ", wrought steel front, one tumbler, reversible.
- 1 Pad-lock, 1 $\frac{1}{2}$ " with 2 keys similar and equal in quality to Yale & Towne Intrepid No. 543.
- 5 lbs. Tacks, cut No. 2.
- 5 lbs. Tacks, cut No. 4.
- 1 pr. Window sash locks, wrought steel double inverted.

- 1 pr. Window sash lifts, 1 $\frac{3}{8}$ "x4", cast metal.
- 4 Window frame pulleys, front, 4 $\frac{7}{16}$ "x1", dia. of wheel, 2".
- 100 ft. Wire cloth, 20" wide, black.

#### ELECTRICAL EQUIPMENT

- 4 Bells, iron box, 2 $\frac{1}{2}$ " Menominee.
- 2 Buzzers, iron box, 2 $\frac{1}{2}$ " Menominee.
- 2 Fuse block, two circuit, 30 amp. 110 V. D. B. block, 2 wire.
- 1 Meter, recording watthour, A. C. 110 volt, two wire.
- 1 Motor,  $\frac{1}{4}$ " H. P., A. C., single phase 110 volts, 60 cycle, for washing machine.
- 1 Motor,  $\frac{1}{6}$ " H. P. universal single phase, 110 volts, for vacuum cleaner.
- 6 Plugs, attachment cords, Benjamin No. 903.
- 12 Push Buttons, wood.
- 1 doz. Receptacles, cleat.
- 2 Sockets, chain pull.
- 2 Sockets, two-plug (way), cluster.
- 6 Sockets, key, strain relief.
- 1 Soldering, iron, electric; American Beauty No. 3138.
- 1 Switch, lever, double pole, single throw.
- 4 Switches, two-pole, wooden base, for 3 to 6 volts, about 1 $\frac{1}{2}$  amp.
- 1 Transformer, bell ringing, Dongan Jr. P.

#### ELECTRICAL SUPPLIES

- 50 ft. Cord, electric light, C. C. No. 18.
- 6 Dry cells, Columbia.
- 2 doz. Fuses, plug, 10 amp.
- 4 lbs. Staples, common  $\frac{5}{8}$ ".
- 2 lbs. Staples, insulated.
- 6 1 lb. rolls Tape, friction.
- 1 1-lb. roll Tape, rubber.

The characteristics of the different kinds of coal. Gaseous and liquid fuels. Principles of heat distribution. Oxidation and combustion.	Ability to use fuel economically.
Knowledge of air circulation. Regulation of drafts. Spreading fuel on grates. Clean flues and grates.	Ability to operate a hot air furnace.
A single-pipe steam heating system; a return pipe system. Size and ratings according to catalog specifications. Principles of operation.	Ability to operate a steam heating plant.
Circulation of hot water. Size and rating of hot water heating plants. Principles of operation.	Ability to operate a hot water heating plant.
The construction of a refrigerator; non-conducting materials, drainage. Economy of maintenance. Sanitation.	Ability to keep a refrigerator in a sanitary and efficient condition.

2 1-lb. coils Wire, bell, No. 18, C. C.  
200 ft. Wire, rubber insulated, No. 14.

#### GLAZIERS SUPPLIES

1 lb. Glaziers points.  
10 lbs. Putty (in sealed can).  
10 lbs. Whiting.

#### PLUMBING EQUIPMENT

2 Basin cocks, compression,  $\frac{1}{4}$ " for iron pipe, porcelain indexed, nickel finish.  
2 Bibb cocks, compression  $\frac{1}{2}$ " for iron pipe, T-handle, brass finish.  
2 Bibb cocks, compression hose,  $\frac{1}{2}$ ", for iron pipe, T-handle, brass finish.  
2 Bibb cocks, Fuller,  $\frac{1}{2}$ ", for iron pipe, porcelain indexed, nickel finish.  
1 Cesspool cover, with bell trap, 6"x6", iron strainer.  
1 Faucet, bath tub combination, fuller porcelain, indexed, nickel finish.  
1 Faucet, bath tub combination, fuller porcelain, indexed, nickel finish.  
3 Floats, round 5".  
1 Flushing tank, low down; elevated supply valve, copper lined tank, float valve.  
2 Sill cocks, compression;  $\frac{1}{2}$ ", for iron pipe, wheel handle, brass.  
1 Sink, 18"x30"; cast iron, flat rim, enameled.  
2 Traps, Drum; cast iron.  
2 Traps, S; long S for sink collar, cast iron.

#### PLUMBING SUPPLIES

4 doz. Gaskets for compression faucets,  $\frac{5}{8}$ ", composition rubber.  
2 doz. Gaskets for fuller faucets,  $\frac{5}{8}$ ", composition rubber.

#### TINNERS SUPPLIES

2 lbs. Resin, in good sized lumps.  
2 lbs. Salmoniac, large pieces.  
3 quarter-inch boxes Soldering paste, "No Corode."  
5 lbs. Solder wire, spool, 50-50.  
5 sheets Tin, I. C. bright; 20"x28".  
2 lbs. Tinnners rivets.  
1 Wrench, Stillson, 6".  
1 Wrench, Stillson, 8".

#### TOOLS AND APPLIANCES

1 Fire pot, one burner,  $\frac{1}{4}$ " pipe connections.  
6 Glass cutters, multiple disc, Millers Falls.  
2 Hammers, cross been, 12 oz., Maydole.  
2 prs. Pliers, cutting, flat nose No. 50, Red Devils.  
4 pr. Pliers, cutting, round nose, No. 645 Red Devils.  
4 Putty knives, Lamson.  
6 Screwdrivers, 3", Champion, regular.  
2 pr. Snips, tinnners, 2" cut.  
1 pr. Snips, tinnners, curved, 2" cut.  
2 pr. Soldering coppers, 1 $\frac{1}{2}$ " pr. common.

*"I suppose that one could define education as the lifting of minds out of blind alleys."*—H. G. WELLS.



## LARS ERIKSSON: EARLY AMERICAN SLOYD TEACHER

ARVID A. ERIKSSON

Secretary to the Mayor of Minneapolis

STUDENTS of manual training have lost one of their best friends with the recent death of Lars Eriksson at St. Paul, Minnesota. In spite of the fact that he achieved considerable success in a number of lines during his varied career, America will remember him as the man who brought his own new home-sloyd system of manual training from Sweden to America.

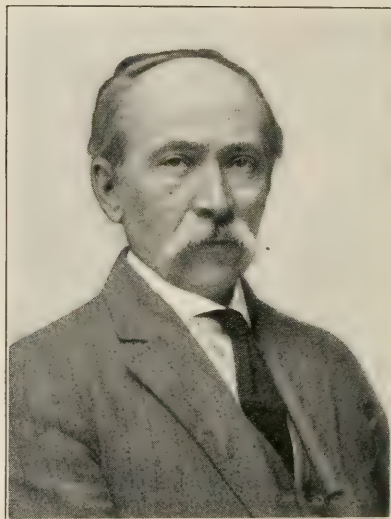
Mr. Eriksson first came into the limelight in Sweden when Professor John M. Ordway of the Institute of Technology of Boston, was sent to Sweden to study sloyd. Ordway chanced to read a paper called "Slojdaren," and after some correspondence, induced Eriksson, who was then its editor, to come to America to teach his system.

Eriksson therefore resigned his position as instructor in a summer school for teachers at Langbanshyttan, and left Sweden in 1884, coming to Minnesota first to visit his daughter. While learning the English language, he held a position as organist in one of the Swedish churches in Minneapolis, and at the same time gave lectures on sloyd to his countrymen.

He met discouragements, however, as many told him the sloyd system would be useless in this country, because of modern machinery. At that time his explanation that manual training was not taught solely to manufacture articles, but to make skilful workers of boys and

give them training along practical lines, did not seem to suffice.

Later at the instigation of Boston educators, Mr. Eriksson was installed at the North Bennett Street Industrial school in that city, where the then popular Naas



LARS ERIKSSON

system was being used. Eriksson soon discovered the system was not suitable for the average student. For instance, the pupil started with knife work, making his article directly from models without knowledge of mechanical drawing. Eriksson changed this, giving instruction in mechanical drawing first, and teaching the pupils to work from their own drawings and not from models. His motto was, "What notes are for music, the drawing is for the sloyd worker. To work directly from the model without a knowledge of drawing is like playing the piano by ear without knowing the notes."

Contrary to the Naas system, Eriksson did not start his series with small articles or knife work. He declared that the saw

---

Lars Eriksson died on the 22nd of September, 1920, at the age of 73 years.

It should be noticed that the author of this article spells his name with a "c" and only one "s." He is not a relative of Lars Eriksson but is the writer of an article on Lars Eriksson which was published several years ago in the *Minneapolis Journal*.

—EDITOR.

was the first tool to be used in wood-working, not the knife, and that it was harder to plane a key-stick 3" long and  $\frac{1}{4}$ " thick than a board 12" by 6" and  $\frac{1}{2}$ " thick. The big piece helped the weak and unskilled hands to hold the plane steady.

His chronological method was as follows: First, sawing; second planing, cross-cutting, ripping, slant work; third, boring, nailing exercises, how to hold the hammer; fourth, chiseling; fifth, carving and knife-work. This was a progressive system in its natural order.

Up to this time Professor Ordway had been using the Russian system, but found this inexpedient. It was not progressive enough and in 1890 he voiced his opinion when he wrote Mr. Eriksson: "The Swedish idea of introducing sloyd into the public schools is worthy of adoption everywhere; and a paper advocating this and coming out from month to month so as to serve as a continual reminder, should have more influence than occasional lectures or discussions."

Mr. Eriksson then began the publication of a paper called "Sloyd or Handiwork." This little paper contained drawings and gradated lessons for the sloyd worker.

After teaching in Boston over two years, Eriksson went to Toronto, Canada, where he delivered lectures before teachers' meetings. Of his methods, Superintendent James Hughes of Toronto, wrote: "I remember very clearly your excellent work in manual training. We have succeeded well in Ontario. The Government has a special inspector for the province, and in high as well as public schools the work is rapidly becoming universal."

Eriksson then returned to Boston, but later broke down from overwork, having taught steadily for twelve hours every working day for two and one-half years. He then returned to Minnesota, glad

that at least part of his mission to this country had been fulfilled, and took up religious work. In 1896 he was ordained a minister of the Swedish Universalist church at Minneapolis. He continued his manual training work, however, and taught boys' clubs for a time.

During the hard times in the late nineties, Eriksson realizing that it would be better for laborers to be on farms than to loaf in the city, went to Mille Lacs county and established a colony, the center of which was Ericksonville (named after him, but spelled differently). He started a small store, trading with the Indians for wild rice and cranberries. In 1898, a postoffice was established there and he was appointed postmaster. After the Soo railroad came thru his town, he replatted the village, selling lots and houses.

A few years ago, he moved to Milaca, Minnesota, about twenty-five miles south of Ericksonville, and began to work on a clock of his own invention, which he said would show perfect time at any point in the world at a glance. According to this clock, there would be no "Eastern time" "Central time," or "Mountain time." At the time of his death he had the invention practically completed.

Shortly before his death, he had also made plans for again taking up the work of home-sloyd education, especially among farmers. "If every farm were equipped with a carpenter shop of some sort, a lathe, a planing bench, a band-saw and tools," he said, "the farmer and his boys could work during the long winter months when the weather is too severe to permit them to work outside."

He believed that the use of sloyd or manual training on the farms in all sections of the country would be a means of lowering the high cost of living and in addition would be an incentive to keep the boys on the farm.



THE FOUNDRY, OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE



THESE two pictures were taken in the foundry at the Agricultural and Mechanical College, Stillwater, Oklahoma, where De Witt Hunt is in charge of the work in industrial education.

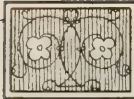
The foundry and forge shop occupy a one-story end of the shop building. The lower photograph shows Edwin D. Soderstrom, the teacher in this shop, and three of his students as they are "pouring off" with a little cupola furnace made from a hot-water tank. The upper photograph very dimly shows two students operating a device for breaking castings. The heavy weight is pulled up several feet by one boy and the other boy drops it by operating a simple tripping device. Behind the boy at the right is a home-made open hearth furnace which is capable of melting iron but is used chiefly for brass. These and the charging platform with welded joints over the boy at the left, and a good core oven not shown are among the pieces of equipment devised and constructed in this department. Even the sand used was searched out and brought in from banks within a few miles of the College.



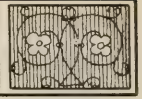
## PHOTOGRAPHS FROM EVERYWHERE



THE two photographs reproduced above were taken in the Gordon School, St. Paul, Minn. The upper one shows library shelving put up by boys of the grammar grades. The lower one illustrates the type of equipment that is being installed in the new elementary school buildings as fast as they are built. George M. Brace, supervisor, says of the photograph, "It is unfortunate that one cannot see the inside of the tool panel (at the far end of the room) as that is a device which we are much pleased with in all our shops. We plan our shops for 24 boys and have the ordinary set of tools, such as jack plane back-saw, three chisels, ruler, try-square, marking gage, dividers, besides the general tools, on the tool panel."



## PROJECTS, PROBLEMS AND NOTES



### TWO TENDENCIES IN SHOPWORK INSTRUCTION

ANYONE looking over the entire field of shopwork instruction will quickly observe two present tendencies which may seem contradictory, but in reality are not so. First, he will notice the constant increase in the number of school shops that are being established or reorganized to meet the conditions of the Smith-Hughes Act with reference to vocational instruction. This is a tendency in the direction of specialization. A person taking a course under this organization is supposed to go far enough into the trade to be definitely equipped for earning a living.

But, while the observer is giving attention to this development of specialized training, he cannot fail to see the strong impulse toward giving a greater variety of mechanical processes—processes taken from a greater variety of trades, and consequently a tendency away from specialization. The manual training teacher who gives four years of woodworking and no other shopwork is beginning to apologize for his course. He may be limited by equipment or held back because he does not yet see just how he can secure the results under the newer ideal without sacrificing something equally good in the older, yet he feels that there is something better than he has been doing, and so he offers an excuse.

An excellent example of the present tendency toward a greater variety of processes is found in Mr. Bedell's article on "Household Mechanics" in this issue. He has a unified, practical purpose as well as a cultural and guidance purpose in bringing into the course a great variety of tools, processes and materials. Another example is Mr. Jacob's report of the attitude of Dr. E. R. Snyder, state commissioner

of vocational education in California, which may be found in the Field Notes Department of this issue. He proposes work in electricity, sheet metal, wood, cement, automobile repair, machine shop, agriculture and shoe repairing.

Moreover, the kind of thinking that is behind such efforts to enrich and practicalize the experience of the boys of the junior high school period is trying to find ways of broadening the mechanical experience of older students. An illustration of this is the rather remarkable announcement sent out recently by the supervisor of agricultural education for the state of Utah. He proposes to offer eleven weeks of summer work for instructors in *farm mechanics*, which includes the following: (1) Study of leather and rope, shoe repairing, rope work; (2) metalwork—hot, cold and sheet; (3) concrete work; (4) painting and wood finishing, glazing, calcimining; (5) electricity on the farm and in the home; (6) plumbing and pipe work; (7) farm and home repairs and construction; (8) vocational drawing, lettering and sign writing, blue-printing and stencil making; (9) farm machinery—repair, operation and care; (10) care and light repair of automobiles. This scheme of instruction definitely recognizes that the modern farmer needs to be an all-round mechanic.

Occasionally we find evidence of this same kind of thinking in the planning of strictly trade courses. The February number of *The Artisan*, published by Dunwoody Institute, contains an article answering the question, "What should a first class machinist know about the allied trades and professions?"

Paradoxical as these two tendencies may seem, they have come at essentially the same period in the development of

industrial education and they belong together. As a matter of fact, each is needed to counteract the possible evil effects of the other. Narrow intensified vocational training alone will never satisfy our American ideal of education; superficial or fragmentary instruction in a multiplicity of trades and industrial occupations alone will not satisfy either present or future demands for vocational education.

The observer of the entire field of shop-work in education, then, if he is looking for present tendencies, will recognize both a drift toward greater breadth of knowledge and experience, and, also, toward specialized skill and thoroness. And, if he is wise, he will recognize that both of these are vital parts of a necessary adjustment to the ideals and practical demands of the new age that is just ahead of us. These two tendencies taken together mean a great strengthening of industrial education.

#### THE FUTURE OF THE SLOYD TRAINING SCHOOL

**P**ROBABLY it is not known to the younger readers of this Magazine that the Sloyd Training School of Boston was founded by the late Mrs. Quincy Shaw, daughter of Agassiz, the famous Swiss-American naturalist who, fifty years ago, was a professor at Harvard University. From 1888, when she asked Gustaf Larsson to come to America to introduce the educational principles and practice of the Swedish sloyd, to the time of her death, Mrs. Shaw gave freely to the support of sloyd work, which very shortly centered in the Sloyd Training School that has been primarily a school for the training of teachers. After the death of Mrs. Shaw, her heirs provided for the maintenance of the school up to the time of the death of Mr. Larsson in July 1919. In fact, they continued their support for

about a year after his death. When it became clear that Mrs. Shaw's work for the school had been completed Mr. Sandberg, the successor to Mr. Larsson, was face to face with the proposition to close the school, and accept a position in some other institution. But at this point the alumni of the school came forward and urged not only that the school be continued, but that its field of activity be enlarged. As proof of their earnestness they contributed funds enough to keep the school in operation during the present year. At the same time they laid plans to seek an endowment with a view to providing for the school a suitable building and necessary operating expenses. We understand that this has not yet been accomplished, but that much interest in the subject is being aroused.

It is to be hoped that these efforts will be successful or that the school may become a department of some larger teacher-training institution like the Normal Art School or of a state or city normal school where it may retain its identity. Altho the school was started to teach an imported system, its work today is thoroly American. And, while it is true that some of the particular problems that this school was intended to solve have already been solved or have been thrust aside by other issues, it still remains true that many are still unsolved and that the demand for progress is as strong as ever. Surely no one would claim, for instance, that all the manual arts problems of the upper grammar and junior high school period are solved, yet these are essentially the problems the Sloyd Training School was established to throw light upon. The chief difference between then and now is that the problems now appear in more complex form, which represents the difference of educational ideals and methods between 1891 and 1921.

Struggling along in its present limited



quarters with bare subsistence, the continuance of the Sloyd Training School may be questionable policy, but, going forward in a new building, with a new vision and with ample support for its activities is above question; the service it would render to the education of the nation would be multiplied many fold, and is needed.

#### THE NEW PRESIDENT OF THE MID-WEST ASSOCIATION

**A**S. PREVIOUSLY announced, the new president of the Vocational Education Association of the Middle West is Professor J. A. James, assistant dean of the College of Agriculture of the University of Wisconsin. He is an example of the fine type of young men who are coming forward in educational work in the Middle West. Except for a little work at Columbia University he is entirely a Wisconsin product, educationally. He graduated from a Wisconsin high school and from a Wisconsin normal school, and then, after five years of teaching in rural communities, both in grade and high school work, he went to the University of Wisconsin to take the course in agriculture. Prior to entering the university, while principal of a high school, he taught some of the first high school work in agriculture given in the state of Wisconsin. Upon graduation from the College of Agriculture he went to the Racine County School of Agriculture and Domestic Economy as supervisor and organizer, being responsible also for the extension work in that county. After two years he was made assistant professor of agricultural education at the University, and continued in that work with promotion to the rank of associate professor and then to that of full professor and

chairman of the Department of Agricultural Education. During the war period he was one of the district state agents in charge of county agent work, and in 1919 he was appointed assistant dean of the College of Agriculture in charge of short courses and student affairs.



J. A. JAMES

His graduate work, both at Wisconsin and Columbia, was in vocational education, particularly industrial education, in order to be able to direct work in his own field in the light of successes and failures in the industrial field.

In the Association he was, last year, chairman of the committee on agricultural education and chiefly responsible for the comprehensive report presented to the Agricultural Section, and during the past two years has been the center of activity in building up the large attendance of men interested in agricultural education. The application of the same kind of energy that has made his past record will carry the vigorous Mid-West Association another step forward

## A POINT OF VIEW

### THE MEETING OF THE NATIONAL SOCIETY

THE N. S. V. E. has met again. This time at Atlantic City. It was once a society with a long name—a sort of a National Society for the Prevention of Cruelty to Industrial Education. Those were the days when such an organization was necessary in order to prevent overzealous friends and misunderstanding opponents from rocking the boat. Well! The V. E. boat of 1921 arrived O. K. this time at the shore resort, and from the number of delegates who spent their time on the board walk it must have been tossed ashore instead of tying up to the Million Dollar Pier.

Of all the dreary places to have an assembly of Conventionites, the Pier Hall has no peer—cold, clammy, and cheerless. The general assemblies were poorly attended. No wonder! The only bright spot there was that radiating from the desk of the genial Miss Ware. The sunny side of the million cold dollars was occupied by the exhibits. They were splendid and truly educational. The Society has been urged before to take on this feature so prominent in the Association of the Middle West. The N. E. A. Convention, immediately following the N. S. V. E., made exhibits so perfectly feasible that the Eastern men were willing to bet on a sure thing. It was an innovation which should be repeated.

I suppose that head-liners and movies have so enlarged my eye brain that exhibits interest me more than speeches which must enter thru my ear brain. But it is hard to listen when one literally has cold feet. It was only a step to the exhibits of our old friends, Stanley, Disston, Oliver, A. W. W. Co., A. T. F. Co., Dixon, Prang, Hammitt, Bradley—and, last if not least, the Manual Arts Press. The greetings of their representatives

started the circulation, temporarily chilled by the interval in the hall. I could not help wishing as I looked at the Stanley exhibit, that educators had something to sell and that their profits depend upon service. Every suggestion of the Stanley clientele is weighed and if possible adopted. Screwdrivers of all kinds, for all conditions; handy devices to make results efficient and economical. Every exhibitor showed a school-public-pleased policy. We might learn a lesson or two in service ourselves by studying the service features of the modern school equipper. I must not write more because I shall soon be told that this is not the advertising section of the Magazine.

I intended writing on "Who's Who and What's What." That is, I thought I could tell you something of who was present and what was said. It would be easier to write on who wasn't there and what wasn't said. The members of the Old Guard were marked present and they sat in the Amen Corner in the intervals between board walk strolls and round table discussions. None were so feeble as to require a push auto on the board walk, but many found an excuse. California, Oregon, Washington, Utah and Montana were there from the Far West, to say nothing about those of the Hub and all the spokes of N. E.

There is a new guard coming to the front and they are not in the Amen Class. They were asking of the future of the Society of V. E.'s. Having in the past prevented indiscretions and surgical operations on industrial education, these virile fellows were wondering whether the organization should change, not merely its constitution and membership dues, but rather its method of working. I heard such questions as these "Shall the Na-

tional Society control V. E. thought and label some of it with its stamp of approval, or shall it be a forum where the board walk delegates can come inside and tell what's what and why's who?" "Is it best to raise the dues and support ourselves or let some rich men do it?" "Is there anything that the organization really can do or had it better be gassed?"

I heard that Wilson of Albany, the new President took the office on the condition that the Society meet in the Middle West, and that it publish a magazine. I know that he intends to have the letter head print the names of the council so that the reader may know that it is a National and not an Eastern Society. The election of Merchant of Ontario to the council takes the Society over the boundary line. The magazine will represent the four fields of endeavor, and each will be in charge of an editorial board. The central Editorial Board will meet to establish policies and a proper balance in the various departments. State and Regional branches will be organized and any member of the local may become a member of the Society by paying one dollar. A conference fee will be charged for those attending the conference.

The section meetings were very well attended, and under attractive physical conditions. There were two hundred and ninety-seven persons at one of the industrial conferences on foremen and plant training. (This exact figure is given to prove that the correspondent was there.) The commercial section proved itself to be a growing and going concern. Nichols of the Federal Board, now of the Pennsylvania Education Department would naturally attend to that. By the way, if I were twenty years younger I would go into commercial education rather than into industrial education. Why? Well! That is another story in itself. The home making, domestic science, housekeeping,

household arts, home economics section (I give all the terms to satisfy the various schools of thought) was a winner. But no mere man would attempt to mention any names and thus show discrimination when it comes to the ladies. The agricultural section had the widest representation of states, and the usual clearness of statement and policy. The National Vocational Guidance Association is alive again. Of course, some one will say that it has never had an obituary notice. The large attendance at its meetings proves that notice of its death was greatly exaggerated. It, too, is now organized on a National basis. The movements of the junior high school and the continuation school, with their need for vocational guidance principles has brought it back to the educational fold. It is no longer wandering in the realm of employment management and the building up of a personal political machinery. It now has able and sincere direction.

#### ON GOING TO CONVENTIONS

EVER since reading G. B. S. "on going to church" I have wanted to write "on going to conferences." It is almost an occupation in itself, and when ones expenses are paid out of teacher-training funds it constitutes a diversion and may be a profit. I once had a superior who did not believe in conferences. His reply to a request of mine to attend one is a classic, and I take it out of the files and give it to you. "Conferences will be held, I suppose, as long as there are railroads which enjoy carrying people and hotels which are delighted to entertain them, and as long as there are congenial spirits who enjoy getting together."

My first conference was in 1895. To afford it meant riding for two nights and a day in a day coach, eating crackers and bananas. The result was that I met Harvey and Stout of Wisconsin and I



would ride blind baggage today for a similar inspiration. I thought I would go from Chicago to Peoria as it looked on the railroad map as though it was about the same distance as going from Boston to Worcester. I counted my cash. I had enough for a round trip ticket, but not enough for sleeper or food. I recall Bennett met me at the train. He expected to see me come out of the sleeper. He never knew that the breakfast he gave me was very much appreciated.

Going to conventions does pay, and I am talking to the young and old fellow who says "Oh, what's the use. I can read the stuff in the report." True he can read it, but does he know the man who spoke? Did he hear the discussion? Does he know that oftentimes the speaker is talking for effect and publication, and that the real meat comes that night when we gather around the table or in the lobby and he tells us the truth.

To make a long story short suppose I put things down in a topical order.

(1) Go, at least, to one convention a year—county, state, or national. Plan for it and make it a job and not a junket.

(2) Take your choice between staying at a good hotel and eating around the corner, or sleeping around the corner and holding down a chair in a good hotel.

(3) Sleep anywhere you can or where you have to, but spend all the time possible in the lobby before a meeting and after it. Go to the movies at home. Time is too precious at conventions to waste it on C. C.

(4) Get a program. Study out who you want to hear. Make a marginal note of one key thought that each speaker gave.

(5) At the close of the evening session go to the lobby of the headquarters. Do not go to bed early.

(6) At meetings either sit up front where you can hear or at the back where you can see. Do not be squeezed in at the center of a row in the middle of a hall where you cannot get out if you want to, or where if you do go out you will attract more attention than you deserve.

(7) Do not take copious notes. You will never read them when you get home and you will not

understand them if you do. Besides you will miss the speaker's expression and the audience's reception. Better sit at one side near the front to see the audience, as well as the speaker. Both are psychological studies.

(8) Take part in the discussion. Give your name and position. Speak from the front or the side of the room. Remember that it takes experience and training to say something specific in five minutes. Anybody can ramble around the old-home-town type of speech for an hour.

(9) If you do not know one of the big men, introduce yourself. He may be more cordial than the little fellows who are in your class (temporarily.)

(10) Do not eat alone at Childs. Get a crowd together and eat there or anywhere. You cannot afford to spend a hundred dollars for car fare and then miss the good things and good people thru attempting to save fifteen cents on a breakfast. Do not chum alone with your buddy. Find a new one. Buddy and you can see each other any time.

(11) Talk with people who do not agree with you. It is easy enough to stand around the lobby with buddy and criticize everybody else. You did not come to the convention to prove to yourself that you were the only real man there. Prove it to others.

(12) Remember that nature gave man two eyes and two ears and only one mouth, i. e., four times as many inlets as outlets.

(13) Take your wife and introduce her to other wives and expect them to enjoy themselves without you. They would probably like a change. You are there for business. If your wife is not interested in your affairs then let her find expression for her own.

(14) Buy the newspapers and use their accounts of the meeting as a basis for your report to your superiors. Watch out, however, as reporters do not always get things straight.

(15) Remember that attendance at a national convention properly managed is as good as, or may be better than, a summer session at a university. Both are advisable.

(16) Subscribe for the *Manual Training Magazine* to see if the correspondents report the Convention as you saw and heard it. They probably do not.

Conventionizing for twenty-six years brings to my mind this story: When John L. Sullivan heard that Henry Irving was dead he remarked, "Well, there are not many of us fellows left."

—ARTHUR DEAN.

## WASHINGTON CORRESPONDENCE

### CATHOLIC BUREAU OF EDUCATION

OF SPECIAL interest to all educators is the establishment in December, 1920, of a bureau of education by the National Catholic Welfare Council, with offices at 1312 Massachusetts Avenue, N. W., Washington, D. C. The purposes of the new bureau are to serve as a clearing house of information concerning Catholic educational agencies, as an advisory agency for Catholic educational systems and institutions, as a connecting and interpreting link between such institutions and government educational agencies, and as an organization to safeguard the interests of Catholic education.

It is proposed to collect full information concerning Catholic schools and colleges, which will be made available to the United States Bureau of Education and to the general public, and to publish an annual directory of Catholic education.

According to an official statement issued by the bureau, it "believes in public education and the public school system, and . . . that it is the duty of every American citizen to contribute to the support of public schools, but it is his right to send his children to any type of school he may wish, provided such school is truly American in its teaching."

The director of the bureau of education of the National Catholic Welfare Council is Major A. C. Monahan, who was for a number of years chief of the division of rural education in the United States Bureau of Education. During the war and since he has been connected with the Surgeon General's Office in the U. S. Army, his last assignment being in charge of education at Walter Reed General Hospital, Washington, D. C.

### MR. DODD COMES TO WASHINGTON

THE many friends of Alvin E. Dodd will be interested to know that he has recently come to Washington to

accept an important post with the Chamber of Commerce of the U. S. A. Mr. Dodd is well known as a contributor to this MAGAZINE, beginning with the time, years ago, when he was director of the North Bennet Street Industrial School in Boston. After serving as secretary of the National Society for Vocational Education, he became director of the National Retail Research Association. I hope to write more about his new work in Washington.

### BUREAU OF EDUCATION CONFERENCE

A VERY successful conference, called by the Commissioner of Education, was held in Atlantic City on February 23rd. Representatives were present from 18 states, the District of Columbia, and Canada. The program consisted of three able papers on various phases of "the contribution of correspondence-instruction methods to industrial education," and the speakers were Robert B. Keller, director, industrial service division, International Correspondence Schools, Scranton, Pa.; Russell N. Keppel, director of training, Standard Oil Company, Bayonne, N. J.; and Robert H. Spahr, educational director, Winchester Repeating Arms Company, New Haven, Conn.

In summarizing the discussion Dr. Snedden of Teachers College expressed the opinion that the topic under consideration "is of far more significance to the future of the industrial education in which we are interested than appears on the surface." He assigned two reasons for this opinion: (1) As we gradually make some progress toward universal education we are confronted with the fact that classroom instruction is too expensive; we must find some satisfactory substitute; we must discover ways and means of "delivering more education for less money;" (2) The aim of efficient education must ever be "toward the de-

velopment of the maximum of self-help," thus rendering the constant service of the individual classroom teacher less and less necessary.

It is expected that the papers and a summary of the discussion will be printed later in pamphlet form for distribution by the Bureau of Education.

#### THE ATLANTIC CITY CONVENTION

THE Atlantic City convention of the National Society for Vocational Education was greatly favored by agreeable weather—out of doors. In fact, some persons seemed to find it more agreeable strolling up and down the Board Walk in the bright sunshine, and listening to what the wild waves were saying, than to sit and shiver in the ball room on the Million Dollar Pier, and try to get the drift of the speakers' remarks between blows of the hammers of the carpenters and stage hands in the adjoining exhibit rooms.

#### PROBLEMS OF THE CONTINUATION SCHOOL

Two sessions of the convention interested me particularly, the first being the opening one on "problems arising in part-time or continuation school education," on Thursday. W. A. O'Leary, assistant commissioner of education for New Jersey, called attention to the difficult conditions in our public school systems generally, which are forcing the closest scrutiny of every suggestion looking toward expansion: building programs in arrears, construction costs and equipment prices almost prohibitive, supply of teachers at low ebb, and the like.

After analyzing the characteristics of the boys and girls usually found in the continuation school, he discussed the cause of inefficiency in industry today under four heads, and suggested the ways in which the continuation school

can contribute toward the removal or amelioration of these conditions: (1) High labor turnover; (2) Prolonged employment of the workers on monotonous tasks; (3) Low standards of physical condition and health; (4) Lack of vocational training.

Owen D. Evans, assistant director in charge of continuation schools for Pennsylvania, read a paper on "the specific functions and consequent organization of an urban continuation school," in which he showed how a study of the students to be served reveals clearly the function and the needed organization. Near the close of his paper he gave some very valuable information in quantitative form, which should be of great help to superintendents and boards of education in formulating the necessary organization to deal with actual situations. Discussing in definite terms the number of hours per week, students per teacher, and the like, he showed of what the staff should consist to care for 80, 150, 300, 750, 1,000 students.

One important point was that, independent of the shop facilities made available by the junior high school or some other department, not much variety of shop instruction can be offered economically in a continuation school of less than 1,000 students, and why.

#### TRAINING IN INDUSTRY

At the Friday afternoon session H. H. Tukey, director of training, Submarine Boat Corporation, Newark, N. J., read a paper on "the educational engineer in industry." He called attention to the fact that in three years the company he represents has spent \$2,500,000 on training alone, and asserted that the person in charge of such a training program is appropriately called an "educational engineer"—his problems are education; his function is engineering. "his duties



consist primarily in applying the laws of learning to the development of man power in industry."

Speaking of sources of supply of educational engineers, he maintained that the job demands a man who has a broad industrial foundation gained thru actual experience in industry and who has then acquired a thoro working knowledge of educational laws and procedure. "We must, therefore, look to the industries to find capable men and women who may be trained as educational engineers."

Mr. Tukey emphasized the fact that, as yet "industrial education has only scratched the surface of training." The great masses of unskilled and semi-skilled workers have not yet begun to receive the attention they deserve and must have before our problems are solved. Apprenticeship is indeed one of the important training problems of industry, but it is "only a drop in the bucket of what is needed."

An interesting account of a practical experiment in "training workers thru the

cooperation of the unions and manufacturers associations" in the fur and leather industries was presented by Herbert Blair, director, New York School for Fur and Leather Workers. A very helpful analysis was given of the conditions which are essential or which make for success in an industrial school. He showed that it is no longer a question as to whether a trade school or class can be operated successfully on a productive-shop basis. This has been demonstrated by a number of trade and technical schools. The important question is, "Does a large enough proportion of the students who take the instruction succeed in getting a sufficient start to enable them to make a living in the industry, and can places be found for them?"

There were other interesting sessions and valuable papers; and I wish I had time also to say something of the commercial exhibits, which were unusually varied and extensive; but now my space is used up. It was a splendid meeting.

—WILLIAM T. BAWDEN.

## IN FOREIGN COUNTRIES

LETTERS FROM DR. KERSCHENSTEINER

**M**ANY readers of this Magazine will be glad to learn that Dr. Georg Kerschesteiner, founder of the famous industrial continuation schools of Germany, is still engaged in educational work, tho no longer in his former position as superintendent of schools of Munich. Some of his friends in America have recently heard from him, and they are pleased to learn that his influence is again extending beyond the limits of his own country. His present official position is that of professor of pedagogy at the University of Munich. Last summer he was called to the most important pedagogical professorship in Germany, but

owing to the poor condition of his health<sup>9</sup> which was the direct result of his very trying experiences during the revolution following the War, he did not feel that he would be justified in accepting. However, his health has been much better during the past few months, and he is enjoying the work with his students.

Two other facts, also, have helped to compensate for the personal anxiety and losses of the revolution. The first of these was that several of the neutral countries of Europe have sought his advice. In the spring of 1920 he visited Holland; this spring he goes to Norway, and during the coming summer he will give a course of lectures in Switzerland. An invitation

came from Sweden, but he has been unable to accept that in addition to the others. The second source of encouragement was the action of the great state conference on education held in Berlin last summer, where his ideas gained complete victory. The chief source of worry now in carrying forward the type of school work for which he stands is in providing the funds to put into practice the resolutions adopted at the Berlin conference.

As would be expected, Dr. Kerschensteiner's letters reflect his anguish of spirit over the deplorable condition of his country. He does not see better times for Europe within the next few years. In one of his letters he says, "People have to be punished yet with more and greater misfortune before they come to the conclusion that hate is the seed that ruins the sower, and that only love and goodness, while softening another's distress, gives peace and satisfaction to one's own soul."

#### TRAINING IN THE GLASS INDUSTRY

A RECENT item in the *Times Educational Supplement* gives information concerning a scheme for educational work in a glass factory in Wealdstone, Middlesex, England, that has been worked out by J. H. Gardiner, with the assistance of the educational authorities. The scheme is to be carried out in the new factory of James Powell and Sons. It is described thus:

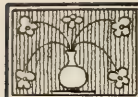
The boys, having been told the character of the work and the prospects that it holds out to them, are invited to attend a series of evening continuation classes during the coming winter, when a syllabus has been arranged to give them a thoro grounding in English, arithmetic, the metric system, physical manipulation (woodwork, &c.), freehand drawing, and elementary chemistry and physics. After attending the classes a selection will be made of the most promising boys, who will then pass thru a special course of technical lectures on glass, its chemistry and properties. After this they will be drafted into the works, where a special laboratory

is being fitted up in which they, for a certain number of hours a day, will learn the rudiments of the many branches of the industry. The remaining portion of the day they will be employed in making themselves useful in one or other of the many departments of the company. During this time of probation and instruction they will receive a small nominal wage and as soon as, by their skill and industry, they are able to do useful work they will be passed into the works proper, and be paid the union wages for the duties they are fitted for.

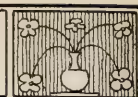
#### COST OF EDUCATION IN GREAT BRITAIN

STATISTICS just received by the Foreign Information Department of the Bankers Trust Company, of New York, show that the amount of money provided for requirements of the British Board of Education in the current fiscal year, beginning April 1, is almost two and one half times the sum necessary in 1918. This increase is causing much perplexity. At a recent conference of officials the President of the Board of Education, Mr. Fisher, said that he was "deeply concerned" on account of the rapidity of the increase. He attributed the "phenominal increase" almost entirely to the devaluation of the money. "Everything is more than twice as dear as it was before the war." He thought legislation on the matter undesirable; he would especially "deprecate anything like a sudden stoppage of educational progress."

*The Schoolmaster* quotes Sir Henry Hardow as saying in an address on "Education and Leisure" that whatever education may be, it should not be a "breathless, personally conducted Cook's tour thru the arts and sciences." Some American supervisors would do well to remember this. There is a mean between "nothing and everything" that is quite enough to stimulate the child's intelligence and give him a desire to learn. Some things should be kept outside the formal curriculum with time and opportunity to find them.



# EDITORIAL REVIEW FOR THE MONTH



## COMPARISON OF FIVE DIFFERENT TYPES OF GLUE

Table prepared by Forest Products Laboratory

PARTICULAR COMPARED	ANIMAL GLUE	CASEIN GLUE	VEGETABLE GLUE	BLOOD GLUE	LIQUID GLUE
Source	Hides, bones, horns, etc.	Casein from milk	Cassava starch	Dried blood	Animal glue or fish parts
Cost per lb. 1920	25-42 cents	16-20 cents	10-12 cents	20 cents	\$1-\$5 per gal.
Spread in sq. ft. per lb.	25-35	35-55	35-50	30-100	No data
How mixed	Soaked in water and melted	Mixed cold with rapid stirring	Mixed with al- kali and cold or hot water	Mixed cold	No preparation
How applied	Warm with brush or mechanical spreader	Cold with brush or mechanical spreader	Cold with mechanical spreader, not by hand	Cold with brush or mechanical spreader	Cold or warm usually applied by hand
Temperature of press	Cold, or with hot cauls	Cold	Cold	Hot	Cold
Strength (in shear test)	High grades stronger than strongest woods	Equal to medium grade animal glue	Equal to medium grade animal glue	High strength in plywood. Not used for joint work	Best grades equal to medium grade animal glue
Water resistance	Low	High	Low	High	Low
Chief uses in wood- working	For strong joint work	For water resis- tant plywood or joint work	For veneer work because of cheapness	For water resistant veneers	For repair work and small articles

### EFFECT OF VARYING THE NUMBER OF PLIES IN PLYWOOD

**I**N MAKING up plywood for a particular use the question frequently arises, Should three plies or more than three be used to obtain the required thickness? Some data from tests by the U. S. Forest Products Laboratory may be of assistance in answering this question.

An increase in the number of plies results in a decrease in the tensile and bending strength parallel to the grain of the faces and an increase in the corresponding strength at right angles to the grain of the faces.

If the same bending or tensile strength is desired in two directions, parallel and perpendicular to the grain of the faces, the greater the number of plies the more nearly the desired result is obtained. It must be borne in mind, however, that plywood with a large number of plies, while stronger at right angles to the grain of the faces, can not be so strong parallel to the grain of the faces as three-ply wood, and hence a three-ply panel is preferable where greater strength is desired in one direction than in the other.

Where great resistance to splitting is necessary, as in plywood that is fastened along the edges with



screws and bolts and is subjected to forces thru the fastenings, a large number of plies affords a better fastening.

It is common experience that a glued joint is more likely to fail when thick laminations are glued with the grain crossed than when thin laminations are glued. The same weakness exists in plywood when thick plies are glued together. When ply-



WOOD-TURNING SHOP, SUMMITVILLE, IND.

wood is subject to moisture changes, stresses in the glued joint due to shrinkage are greater for the thick plies than for the thin plies. Hence in plywood constructed with many thin plies the glued joints will not be so likely to fail as in plywood constructed with a smaller number of thick plies.

—FOREST PRODUCTS LABORATORY.

#### GOOD USE OF WOOD-TURNING EQUIPMENT

THE accompanying photograph shows a corner of the workshop in the high school at Summitville, Ind. Paul V. Woolley, principal of the school and teacher of shopwork and athletics, says of it, "We secured six lathes, which have been used for three years, and bought a second-hand motor for driving them. The total cost was about \$200.00 and we have turned out over \$400.00 worth of lamps, candlesticks, smoking sets, pedestals, piano benches, Indian clubs, tables (with turned legs) nut bowls, etc." Evidently Mr. Woolley is giving a great deal of thought to training in practical problems of economics both public and private, for he says that the boys sold articles at Christmas time and paid for materials. They also turned out presents and made some money for themselves. He adds, "We sell a part of the pupils' work for a fund to apply on the cost of the machinery and operation. The course has proven

a most interesting one and has made the possibilities of manual training work much greater."

#### SUGGESTIONS FOR POULTRY HOUSE BUILDERS

IF YOU plan to have your boys build hen houses this spring send to the U. S. Department of Agriculture for "Poultry Houses" by Alfred R. Lee. It is "Farmers' Bulletin No. 1113." It has been written "briefly and in simple style for the beginner, and especially for members of the boys' and girls' poultry clubs." A more complete treatment of the subject is found in "Farmers' Bulletin, No. 574,; Poultry House Construction."

#### CHARRING DOES NOT PRESERVE WOOD

CHARRING is of little value in protecting the butts of fence posts and telephone poles from decay. This is shown by service tests made by the U. S. Forest Products Laboratory on fences of charred and untreated posts of various species. The charred posts proved in these tests to be even less durable than the untreated ones.

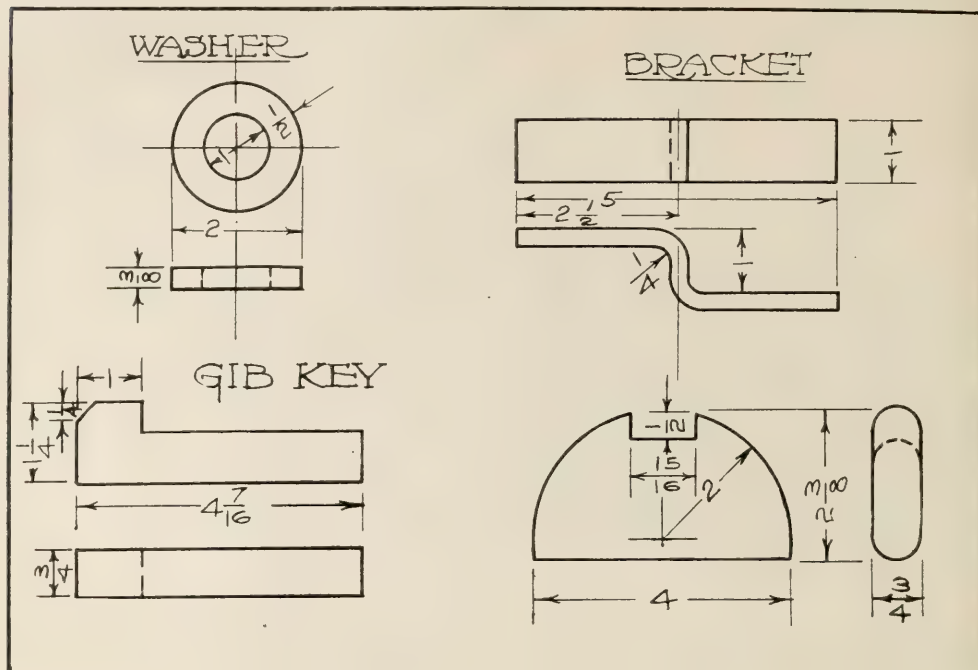
Theoretically, an area of charred wood around a post should prevent decay, because charcoal does not decay or encourage the growth of fungi. But the charred area around a post is not usually a solid covering. It is checked through in many places. If posts are seasoned before they are charred, the charring does not reach to the bottom of the season checks which are always present. If green unchecked posts are charred, checks will open thru the charred part as the wood seasons. In either



MAHOGANY TABLE LAMPS. MADE IN BELLINGHAM, WASH., UNDER SUPERVISION OF FRANK C. VINCENT.

case the uncharred center of the post is exposed to fungus infection and will decay as rapidly as any untreated wood.

Charring deep enough to resist decay would undoubtedly weaken a post of ordinary size.



### PROBLEMS IN FORGING

**T**HE forging problems shown this month are a part of the series being contributed by Griffith E. Owen, of Grand Rapids, Mich. His outline of steps for each problem is given below. He wishes to have it understood that these suggested steps are suitable only for the school shop with its limited equipment. In the industrial shop where a large number of these examples would be made other methods would be used. In the case of the washer, if a large number were to be required, they would be stamped out with a machine, but if only one was required in the general shop or school shop, the piece would be made in accordance with the suggested steps.

#### WASHER

The washer can be made in two ways:

*First method.*

1. Cut stock.
2. Cut corners and forge round.
3. Punch hole with tapered punch.
4. Finish on mandrel.

*Second method.*

1. Cut stock  $\frac{1}{2}$ " round,  $4\frac{1}{2}$ " long.
2. Turn ring and scarf.
3. Weld.
4. Shape to finish size.

#### BRACKET

1. Cut stock 6" long.
2. Bend with top fuller on edge of anvil.
3. Square bend.
4. Cut off extra stock on ends.

#### GIB KEY

1. Use short bar of stock.
2. Cut shoulder (or use thin fuller to make shoulder.)
3. Draw out square part.
4. Cut off bar.
5. Trim key head.
6. Cut off extra stock on square end.

#### ROUND-EDGE KEY

1. Cut stock  $2\frac{3}{4}$ " by 4".
2. Cut corners.
3. Round edges.
4. Cut slot.
5. Round edge of slot.
6. Finish with flatter.

### MAKING MAY-POLES

**T**HE machine woodworking room in the high school at Middletown, Ohio, is shown in the accompanying photograph. It represents boys making May-poles. E. F. Juergens, supervisor of

**COLOR SCALE FOR TEMPERING TOOLS**  
By Griffith E. Owen, Union High School, Grand Rapids, Mich.

PALE YELLOW 430° F.	STRAW YELLOW 460° F.	BROWN YELLOW 500° F.	LIGHT PURPLE 530° F.	DARK PURPLE OR BLUE, 560° F.
Scrapers for brass	Milling cutters	Gouges	Edging tools	Axes
Steel engraving tools	Wire drawing dies	Hand plane irons	Augers	Gimlets
Planer tools (steel)	Screw-cutting dies	Twist drills	Cold chisel (steel)	Cold chisels (iron)
Paper cutters	Inserted saw teeth	Flat drills for brass	Hammer faces	Saws for bone
Wood engraving tools	Taps	Coopers tools	Drifts	Saws for ivory
Ivory cutting tools	Rock drills	Dental instruments	Circular saws (M)	Needles
Planer tools (iron)	Chasers	Surgical instruments		Firmer chisels
Bone cutting tools	Punches and dies			Hack saws
	Pen knives			Framing chisels
	Reamers			Cold chisels (w iron)
	Half round bits			Screw drivers
	Planing cutters			Springs
	Wood boring cutters			Saws for wood

- Note.* 1. Find quality of steel.  
2. Find refining heat of steel.  
3. When hardening quench steel at refining heat. Draw temper slowly.



MAKING MAY-POLES IN MANUAL TRAINING SHOP, HIGH SCHOOL, MIDDLETOWN, OHIO.

manual training, who sent the photographs, says concerning it, "This town has raised a civic fund of \$1,000,000 and has a recreation director. This spring we expect to have a May-dance and the boys have built the poles. They are put together with

pin hinges, and can be taken down." *Two lathes put end to end* were used in turning and finishing the poles, tho most of the cutting was done with the draw-knife because of its greater speed. The sanding, however, was done on the lathes.





## CURRENT PUBLICATIONS

*Advanced Shop Drawing* by Vincent C. George, instructor in mechanical engineering, University of Wisconsin. McGraw-Hill Book Company, New York, 1290. Size, 6x9 in.; 147 pages; price \$1.60.

This book has been written to help young men who have an elementary knowledge of mechanical drawing, to gain a practical knowledge of machine and engineering drafting. It was prepared in the extension division of the University. It covers working drawings, gearing, isometric and cabinet drawing, patent office drawing, structural drafting, electrical drafting, piping systems and sheet-metal work. The author has not aimed to give a comprehensive treatment of each subject taken up, but to give a practical working knowledge of essentials.

*Careers For Women* by Catherine Filene, Houghton Mifflin Company.

The author is director of the Intercollegiate Vocational Guidance Association. This book, no less than her work, shows that she, herself, is making a "career." The men who attend the meetings of the National Society of Vocational Education know her father, A. Lincoln Filene of Boston, as one of the steadfast supporters of the movement. He has given money often and what is more, personal and human interest always.

Quite independently of what we know of the father, the book of the daughter is well worth reading. Some women seek "careers," others have them forced upon them. The old French of the word meant a road—a race course—also a charge or a run at full speed. Her book proves conclusively that women at present are not only running at "full speed," but are among the winners. It describes each occupation, outlines qualifications desirable for success, gives the preparation necessary, the financial return, and the advantages and disadvantages. Suggested readings on each occupation follow each occupational evaluation.

The most extensive—and the original—career open to women, namely, wife, mother, and homemaker is not outlined in this description of considerably over one hundred careers. Neither is there any statement of procedure of how women may adjust one nature-given career to a world-made career. But then! why should it? It started out to give in organized form some definite material helpful to the wise choice of congenial work. Such a book was needed and now we have it. No high school or college can afford to be without it. Girls and women seeking a "career" who want to run a course and win must follow racing track principles—training, knowledge of track, clean-cut start, no

"breaking", endurance, and just ordinary "horse sense."

—ARTHUR DEAN.

*The Story of the American Red Cross in Italy.* By Charles M. Blakewell. *With the Dough Boy in France.* By Edward Hungerford. *The Passing Legions.* By George Buchanan Fife. Published by Macmillan Company. Size of each, 5x7½ inches; price, \$2.00.

These three books are part of a series that are being published to set forth the work of the United States in the world war. They are well written and are an appropriate tribute to the work done by the army of civilians that followed the soldiers to Europe.

*Needlecraft for Older Girls* by Margaret Swanson, late of the Glasgow School of Art. Longmans, Green and Company, London and New York, 1920. Size, 6½x8¼ in.; 113 pages; price, \$2.25 net.

This is the first book on needlework that we have seen that is organized on the basis of design. The first lesson is on repetition, the second on radiation, the third on alteration, the fourth on balance. Then comes a study of space and spacing, various forms of surface decoration, proportion, application of ornament, expression of ornament, etc. Stitches in great variety are run along a line, or massed, to meet the requirements of art. In this book stitches and thread of different colors become a medium of expression for the artist in needle work. The applications are made to a great variety of garments, and other things useful and ornamental.

*Illustrated Mathematical Talks by Pupils of the Lincoln School of Teachers College.*

This is a unique pamphlet which should be of special interest to teachers of mathematics. In December, 1919, there was a meeting of the Parent-Teachers Association of the Lincoln School. At that time the pupils gave talks to their parents on mathematical subjects which they had been studying. Many of these talks were illustrated with charts. The pamphlet consists of stenographic reproductions of the talks and reproductions of the charts.

*Elementary Electrical Engineering* by Ralph Preston Clarkson, professor of engineering, Arcadia University, Wolfville, N. S. D. Van Nostrand Company, New York, 1920. Size, 5¼x7½ in.; 187 pages; price, \$2.00.

This is "a textbook of theory and practice particularly adapted for the instruction of mechanical, civil and chemical engineers and others desiring a short course." The book is illustrated with many diagrams and half-tones

## RECEIVED

*Save the Redwoods.* The 1920 annual report of the Save the Redwoods League, of which Franklin K. Lane is president. Robert G. Sproul, Secretary, 430 The Library, University of California, Berkeley, Calif.

*Constitution of the Pennsylvania Society for Vocational Education.* Printed at the Johnstown Vocational School print shop, Johnstown, Penna.

*Camp Pike College, Camp Pike, Arkansas.* An interesting illustrated pamphlet concerning the Army work in education at Camp Pike.

*Suggestions for Teaching Manual Arts.* By H. W. Schmidt, State Supervisor of Manual Arts, Madison, Wis. This is No. 7 of the series issued by Mr. Schmidt, and deals with shop equipment.

*Education for Highway Engineering and Highway Transport.* By F. L. Bishop and Walton C. John. Bulletin No. 42, 1920. Issued by the U. S. Bureau of Education, Washington, D. C.

*Athletic Badge Test for Boys.* A pamphlet issued by the Playground and Recreation Association of America, 1 Madison Ave., New York City. Price 5 cents.

*The Work of the Director of Part-time Education.* By W. A. Tenney. Mimeographed notes issued by the Division of Vocational Education, University of California, Berkeley, Calif.

*Experience of Eastern Farmers with Motor Trucks.* By H. R. Tolley, and L. M. Church. Bulletin 910. Issued by the U. S. Department of Agriculture, Washington, D. C.

*The Care of Leather.* By F. P. Veitch. A pamphlet dealing with the care of shoes, belting and harness. Bulletin No. 1183. Issued by the U. S. Department of Agriculture, Washington, D. C.

*Catechismo Civile.* The English-Italian edition of a pamphlet for use in Americanization classes. Published by the National Catholic Welfare Council, 1312 Massachusetts Ave., N. W., Washington, D. C. The catechism takes the form of parallel columns, one in English and the other in Italian.

*The Unit Course in Poultry Husbandry.* Bulletin No. 63. Issued by the Federal Board for Vocational Education, Washington, D. C.

*The Problem of Summer Teaching in Connection with Project Supervision.* By Aretas W. Nolan, Secretary. School Circular No. 7. Issued by U. S. Bureau of Education, Washington, D. C.

*A New Norton Educational Opportunity.* This pamphlet describes a special half-time mechanical course offered at the Norton Company, Worcester, Mass.

*Poultry Houses.* By Alfred R. Lee. Bulletin No. 1113. Issued by the U. S. Department of Agriculture, Washington, D. C.

*List of References on the Use of Pictures in Education.* Library Leaflet No. 13. Issued by the U. S. Bureau of Education, Washington, D. C.

*Ludlum Steel.* A book of 190 pages dealing with high speed and tool steels manufactured by The Ludlum Steel Company, Watervliet, New York.

*Twelve Good Games requiring no Apparatus, Playground, Money or Experience.* By Charles F. Weller. Pamphlet No. 163. Issued by the Playground and Recreation Association of America, 1 Madison Ave., New York, N. Y. Price 10 cents.

*The Flow of Water in Concrete Pipe.* By Fred C. Scobey, senior irrigation engineer. This is Bulletin No. 852. Issued by U. S. Department of Agriculture, Washington, D. C. This illustrated pamphlet is a carefully prepared technical study of the subject.

*Fire Prevention in Illinois Forests.* By Robert C. Miller, Forest Circular No. 2. Issued by the Illinois State Historical Survey, Urbana, Illinois.

*Agriculture and the New Day.* A twenty-four page pamphlet issued by the American Farm Bureau Federation. Reprinted from *Successful Farming*, published in Des Moines, Iowa.

*Home Economics Courses of Study for Junior High Schools.* A circular issued by the U. S. Bureau of Education, Washington, D. C.

*Turpentine: Its Sources, Properties, Uses, Transportation and Marketing.* By F. P. Veitch and V. E. Grotlich. Bulletin No. 898. Issued by the U. S. Department of Agriculture. This is an illustrated technical pamphlet containing material not ordinarily available in textbooks reaching teachers of woodworking.

*The Home Project: Its Use in Teaching Vocational Agriculture.* By A. K. Getman. Bulletin No. 712 issued by the University of the State of New York, Albany, N. Y.

*Schools in the Bituminous Coal Regions of the Appalachian Mountains.* By W. S. Deffenbaugh. Bulletin No. 21, 1920. Published by the U. S. Bureau of Education, Washington, D. C.

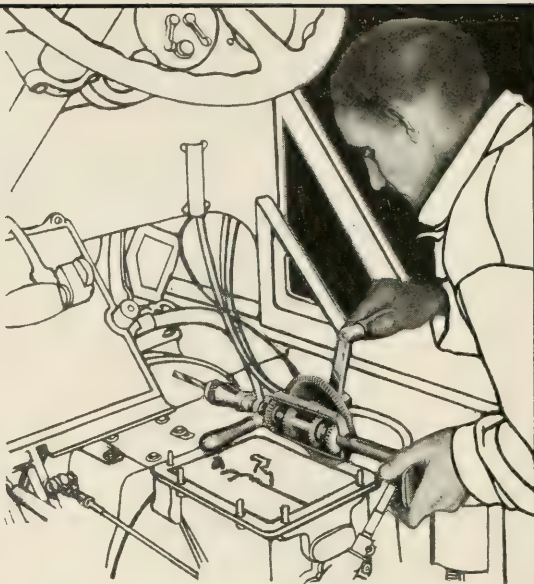
*Report of the Commissioner of Education for the Year Ending June 30, 1920.* Issued by Bureau of Education, Washington, D. C. This report contains a chapter on vocational education which summarizes the progress of the year.

*Leisure Time of the City Child.* The fall number of *School and Home* published by The Parents and Teachers' Association, Ethical Culture School, New York City.

*A Survey of Education in Hawaii.* Made under the direction of the United States Commissioner of Education. Bulletin No. 16, 1920. Issued by U. S. Bureau of Education.



Drilling out  
stud-bolt on  
clutch housing



## Where Other Drills Won't Work

Set the "Yankee" Breast Drill at "Double Ratchet" and go ahead. The slightest to and fro motion of the crank handle sends the drill into the work, cutting with the speed of an ordinary breast drill making a full turn of the handle.

Two speeds and five adjustments give a wide working range: Plain Drill; Left-Hand Ratchet, Right-Hand Ratchet; DOUBLE RATCHET; Gears Locked.

### "YANKEE" Ratchet Breast Drill

No. 1555 (Illustrated) Length 17-in. Three-jaw chuck for round drills up to  $\frac{1}{2}$ -in.

No. 555 Length 17 $\frac{1}{2}$ -in. Two-jaw chuck for holding both rounds and squares.

**Your Dealer Can Supply You.**

*Write for your copy of the "Yankee" Tool Book. "Yankee" Ratchet hand drills, chain drills and all the ingenious "Yankee" metal-drilling, wood-boring and screwdriving tools. It's free.*

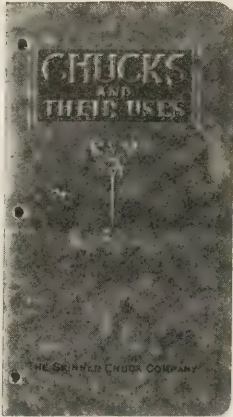


NORTH BROS. MFG. CO., Philadelphia

# "YANKEE" TOOLS

*Make Better Mechanics*

# CHUCKS AND THEIR USES



THE student and teacher of machine shop practice will find this booklet of special interest. It gives reliable information regarding the standard types of chucks, their uses and care. It begins with the history of chucks and the story of their development, details the various types, offers suggestions regarding the proper way to fit a chuck to a lathe and presents a number of succinct and homely don'ts for the teacher of lathe work. It is a compact, easily understandable, well illustrated, 56 page booklet, and is published for free distribution by the well-known chuck manufacturers,

**The Skinner Chuck Co.**  
New Britain, Conn.

## FREE USE THIS COUPON

THE SKINNER CHUCK CO. .....1921  
New Britain, Conn.

Please mail me a free copy of your booklet, "Chucks and Their Uses," advertised in the **Manual Training Magazine**, and for which I am under no obligation.

Name.....

Position.....

Street and No.....

City and State.....

## FIELD NOTES—(Continued)

as well as with the school or system in which they were accomplished. For patriotic reasons, it is desirable to locate teachers of initiative and sound educational principles. If you are doing something of which you are especially proud, notify the Committee, and ask for space. And if you think your talents are being expended in too small a field, Professor Varnum of Wisconsin University, Madison, chairman of the Western Arts Association Appointments Bureau, may help you move.

You will want to attend the Convention for the new ideas it will give you. You will want to attend for the good time you can have. The *annual banquet* will be arranged with the sole idea of sociability and good fellowship. Peoria is promising entertainment that will not stretch moderate purses. Make your plans to come, and boost for the Peoria meeting.

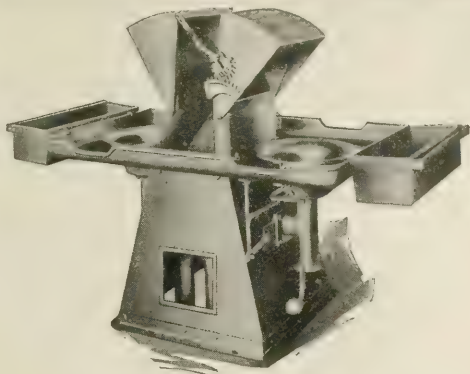
IN A RECENT ISSUE of *School Topics*, the official publication of the Cleveland public schools, is the following item:

"There seems to be a very strong drive towards education under factory roofs but organized, maintained and supervised by public departments of education. During the past year two such schools have been organized in Cleveland, one in the plant of the Cleveland Metal Products Company and the other at the Cleveland Twist Drill Company. These schools give a four-year training to the young workers in those plants. The training is both practical and theoretical and the boys are paid for the time in school."

SAVE THE REDWOODS LEAGUE is the name of a California organization that is endeavoring to prevent the destruction of the giant Sequoias, the oldest trees in the world and the glory of the California forests. Dr. W. L. Jepson of the University of California has stated that these trees live to be from 1,000 to 3,150 years old. Anyone interested in this league should write to R. G. Sproul, 430 University Library, Berkeley, California.

NEWARK, N. J., is looking upon the adoption of the intensive plan of organizing instruction in the manual arts as an important step forward in education. Frank H. Hanson, principal of the Burnet School, who has been an enthusiastic supporter of the plan from the first, writes that the City of Bayonne has become interested in the plan, and that the superintendent of schools sent three of his principals to visit the Burnet school not long ago. They were so much pleased that they recommended that the plan be tried in Bayonne, and already their three schools are working under the new plan.





**"Buffalo"**

The Buffalo Forge Company are the inventors and original manufacturers of the Down Draft Forge.

This forge is designed to remove gas and smoke from the room thereby keeping the air in the class room pure and fresh.

Our catalog 205-31 contains complete data on the Buffalo line of manual training forges and equipment, and contains notes on forge shop practice with exercises. *Write for your copy.*

**Buffalo Forge Company**

**BUFFALO, N. Y.**



## Black Walnut

### MANUAL TRAINING LUMBER

### Special Candlestick Offer

25 pieces choice Black Walnut 12" length by 1 3/4" diameter selected specially for Turning and Carving. Quality will be guaranteed equal to specimen illustrated, which was turned and carved by a sixteen year old boy from Nevada. Delivered free to any point in United States for \$5.00.



Manufactured by

**FRANK R. PORTER**

Washington, D. C.

*Write for special price lists  
on combination lots.*



**BLACK WALNUT TREE**

250 Years Old      4 ft. Diameter





# West Side Iron Works

**Manufacturers of  
MOTOR DRIVEN and  
BALL BEARING  
BAND SAWS**

**OUR 14 INCH BENCH  
BAND SAW**



**Bring Your Work  
To The Saw**

**Applicable to All Conditions**

DIRECT MOTOR DRIVE  
MOTOR DRIVE BY GEAR  
MOTOR DRIVE BY BELT

MANUFACTURERS OF

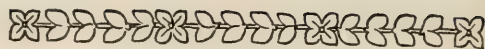
14" BENCH BAND SAW  
36" BAND SAW  
42" BAND SAW  
42" BAND RIP SAW

**WEST SIDE IRON WORKS**

Office  
1219-1225  
Washington Blvd.  
CHICAGO, ILL.



Factory  
GRAND  
RAPIDS,  
MICHIGAN



## FIELD NOTES—Continued)

A WAITING STATION on the trolley line has been built by the boys of the Tatham School, West Springfield, Mass. According to newspaper report it took 6 boys 28½ hours to build it under the supervision of M. J. O'Malley.

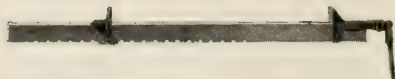
ONE of the questions that is going to be answered in the future, but cannot be satisfactorily answered at the present time is, "Do vocational school students continue in their chosen trade?" Mr. S. Herbert, director of the vocational school at Holyoke, Mass., has collected data from former students in his school which indicate that a large majority do continue, but several are seeking higher education.

THE STUDY of leather and shoe repairing has begun at the Montcalm School, Chicopee, Mass. It is planned to have this study lead on to the study of the human foot and how to fit shoes to it. It is reported that more than twenty boys have expressed a desire to enter this class which is being taught by O. H. Benson of the Junior Achievements Bureau of Springfield.

FRANK C. VINCENT, director of vocational education, Bellingham, Wash., sends the following facts and figures, and says that he would like to get corresponding figures from schools in other parts of the country:

"Bellingham, Washington, has a population of about 30,000. There are two high schools, at one of which most of the manual arts work is done, and at which the Smith-Hughes trades and industries are taught. There are 4,093 pupils enrolled in the city schools. Of these, 1,064 are in the high schools above the 8th grade. This indicates that 20 per cent of the total school enrollment is in the high schools. At Whatcom High School, there are 864 students enrolled above the 8th grade, and 375 of these are boys. Of the boys, 49 per cent are taking work in the vocational department. The same is true of 77 per cent of the freshman boys, and of 54.7 per cent of the sophomores."

## CABINET CLAMPS

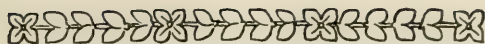


Where Black Bros. Clamps are  
known there is no Second Choice.

**KNOW THEM**

Send for bulletin today.

**THE BLACK BROS. CO.**  
Mendota, Ill.



## FIELD NOTES—(Continued)

ELECTRIC LIGHTS are needed in many of the public school buildings of Philadelphia. It has been estimated that to supply all that are needed would cost \$700,000. In the midst of the discussion of this problem William C. Ash, director of vocational education, came forward and said that the boys of the trade school could install lights in school buildings, and do the work well.

THE VOCATIONAL SCHOOL in Brooklyn, N. Y., has just opened a course in the manufacturing of boots and shoes. This course is offered free of charge to any one over fourteen years of age. The course is very practical. It includes a thorough knowledge of leather and technical information in all branches of boot and shoe manufacturing.

It is possible for a young man who properly completes this course to eventually become an expert, and even to qualify in one or another of the many executive positions open to-day to the man of experience in the modern shoe factory.

ON ACCOUNT of the building of five new intermediate schools and two new high schools in Detroit, J. H. Trybom, director of industrial and manual arts, will need a large number of additional teachers in his department next year.

WORD COMES from Springfield, Mass., that now, when young men are out of work, there has been a large increase in the number of requests for admission to the Vocational School. Unfortunately, the school is already crowded to the limit and the demand cannot be met until the school is in the new building.

ARTHUR B. MAYS, formerly professor of manual arts at the State Normal School, Huntsville, Texas, and more recently in the Army work at Camp Travis, is now assistant professor of industrial education at the University of Illinois.

EDGAR B. DONALDSON, teacher of manual training in the Cambridge Street School, Worcester, Mass., is having his boys print a book that he has written, entitled, "First Steps in Printing." It is to be used in the printing classes as a textbook.

Brother Arnold is leaving the University of Notre Dame, Notre Dame, Ind., this month to go to India where he expects to organize an industrial school in Burma.

## TOOLS

For Manual Training Shops.  
Send your inquiries to and get the especially low prices quoted by

**MONTGOMERY & CO. Inc.,**  
105 Fulton Street New York City

## Wiley Technical Series Books

To be issued during April and May

### MATHEMATICS

For Shop and Drawing Students

By **H. M. Keal** and **C. J. Leonard**  
Cass Technical High School, Detroit, Mich.

### MATHEMATICS

For Electrical Students

By **H. M. Keal** and **C. J. Leonard**

These two books were prepared from notes used with gratifying results at Cass Technical High School, Detroit, an institution of country-wide reputation with over 6000 students. They are **not** shop or electrical texts, but are **mathematical books** giving an **understanding** on this essential subject which will increase the student's practical working knowledge.

"**Mathematics for Shop and Drawing**" will be published early in April, while "**Mathematics for Electrical Students**" will be ready sometime in May.

### PREPARATORY MATHEMATICS for Technical Students

By **Harold B. Ray** and **Arnold V. Doub**,  
Cass Technical High School, Detroit

For students wishing to enter shop or laboratory classes. The subject is treated from a practical and technical viewpoint, and trade problems are given.

"**Preparatory Mathematics**" will be issued during April.

Enter your order NOW for Free Examination copies when ready.

### USE THIS COUPON

John Wiley & Sons, Inc.,  
432 Fourth Avenue, New York City.

You may send me the following on 10 days' approval:

Mathematics for Shop and Drawing Students

Mathematics for Electrical Students

Preparatory Mathematics for Technical Students

I agree to pay for the books or return them within 10 days of receipt.

Also please send me a copy of your Vocational News and put my name on your mailing list.

Name.....

Address.....

If teacher, state school.....

If not teacher, give reference.....

M. T. M-4-21



## The Big Book in its field

The wide use which this new text book has gained stamps it as the big book in the field of mechanical drawing.

**French and Svensen's  
Mechanical Drawing  
for High Schools**  
221 pages, 6x9, 444 illustrations  
\$1.50

A text with problem layouts for a two-year high school course. The first seven chapters comprise a complete text-book which may be used with any problems. The eighth chapter is a complete problem book in which the number of problems in each division is such that a selection may be made for students of varying ability, and that a variation from year to year may be had. The book is based on the findings of the Ohio Survey on the Teaching of Mechanical Drawing in High Schools.

**FREE EXAMINATION COUPON**

**McGraw-Hill Book Co., Inc.**  
370 Seventh Ave., New York

You may send me on 10 days' approval  
**French and Svensen's  
MECHANICAL DRAWING  
For High Schools \$1.50**

I agree to pay for the book or return it,  
postpaid, within 10 days of receipt.

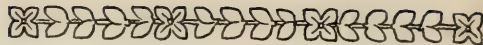
Signed .....

School .....

Official Position .....

Address .....

M. T. M. 4-1-21



### TRADE NOTES

A NEW RULE

A NEW ARTICLE, a 6-foot Boxwood Extension Rule, particularly designed for taking inside measurements of openings, such as door and window frames and similar fixed points, but just as handy as a common rule for ordinary measuring, has just been put on the market by The Lufkin Rule Co., Saginaw, Michigan. While somewhat similar in pattern to a spring joint rule, it is made of genuine boxwood in natural finish.



The first section of the rule is fitted with a graduated brass slide, which extends readily but is not loose and cannot fall out, having an end lock. The extension slide is admirably adapted to determining depth of mortises, etc. The boxwood sections are somewhat heavier than those of a common spring joint and are securely fastened at joints, making the rule more rigid when extended than the ordinary folding rule.

EXHIBITS AT ATLANTIC CITY

AMONG THE MANY commercial exhibits at the recent meetings of the National Society and the Department of Superintendents none probably attracted more attention and interest than the double exhibit of the American Wood Working Machinery

## "JORGENSEN" HAND SCREWS

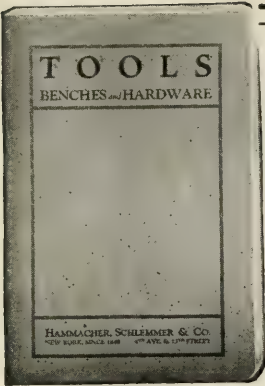
Withstand the  
abuse of inex-  
perienced hands.  
Steel Spindles  
Steel Nuts  
Hard Maple Jaws

**Adjustable  
Clamp Co.**

216 N. Jefferson St. Chicago







# GOOD TOOLS

Are Essential For

## GOOD WORK

Since 1848 we have adhered to one policy.  
To handle only the very best in quality.

Our new Catalog No. 208 of over 300 pages is of particular value to those interested in VOCATIONAL TRAINING.  
Copy upon request.

## Hammacher Schlemmer & Co.

HARDWARE TOOLS AND SUPPLIES

NEW YORK, Since 1848

4th Ave. and 13th St.

**Milling Cutters,  
Reamers,  
Cylindrical,  
Surface and  
Internal Grinding**  
may all be handled on the

*Greenfield*

MARK TRADE

REG. U. S. PAT. OFFICE

## Universal Grinder

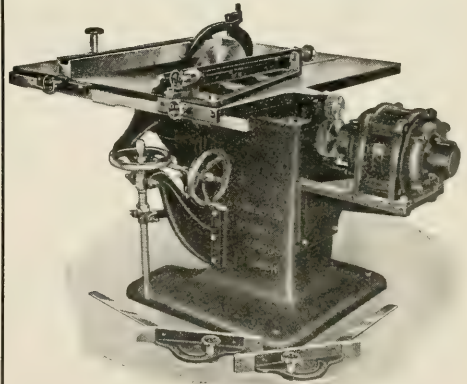
By means of the Universal Vise the sides and ends of square, hex, or octagon bars may be ground perfectly flat and at exact angles with relation to each other.  
Get our No. 7 Catalog and see what comprehensive equipment is furnished with this grinder.

**Greenfield Machine Co.**

Greenfield, Mass., U. S. A.

## SAW TABLES

For MANUAL TRAINING

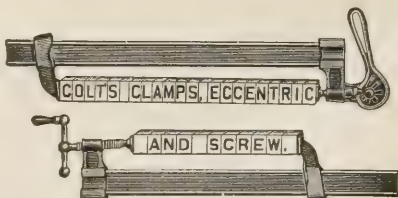


This cut shows our motor driven spiral gear saw table. No countershaft, no belts. Tilting or stationary tops. Write for circular and prices on our entire line. Address

**ALEXANDER DODDS CO.**

451-453 Monroe Ave., N.W.

GRAND RAPIDS, MICHIGAN, U. S. A.



Forty styles of Quick Acting Clamps for the Worker in Wood, Cement and in the trades generally.

Your dealer will supply you.  
Ask for catalog No. 296.

**BATAVIA CLAMP CO.**

237 Center Street

BATAVIA, N. Y.

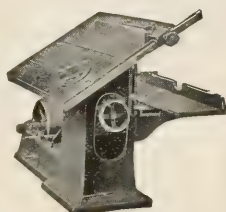
## Marqueterie, Inlay Borders and Purflings for

Manufacturers and Vocational  
Schools

Insets for Trays, Panels, Cabinets, etc. carried in stock.  
Natural and Transformed Veneers in great variety.  
Lines in Holly, Satinwood, Box, Mahogany and Black

**J. BERNARD CO.**

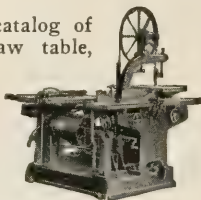
422 to 30 East 53rd St. New York



## Crescent Wood Working Machines

are the tools your students will eventually use so give them the opportunity now of learning about this splendid line of wood working machinery.

Send today for our catalog of band saws, jointers, saw table, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinders, borers, hollow chisel mortisers, Universal wood workers.



**The Crescent Machine Co.**

46 CHERRY ST.

LEETONIA, OHIO

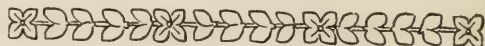
## Tools for Sheet Metal Work

Manual training, vocational and technical schools are invited to communicate with us regarding equipment of shops for sheet metal work, the importance of which is constantly increasing, owing to the popularity of sheet metal as a substitute for other materials.

Ask for catalog M T 56.

**NIAGARA MACHINE AND TOOL WORKS**  
BUFFALO, N. Y.

Manufacturers of  
MACHINERY FOR WORKING SHEET METALS



### TRADE NOTES—(Continued)

Co., of Rochester, N. Y. Furniture including chairs, desks, book-cases, etc., was shown which had been made in the 6th and 7th grades of the Boys' Pre-vocational School of Rochester, N. Y. of which F. O. Roach is principal. This furniture was of up-to-date design, well constructed and finished, showed the result of good training and the possibilities in furniture construction with good equipment. Ten machines such as are used in this school, the product of the American Wood Working Machinery Co., were in operation. All were motor driven, of the latest type rotor drive. The machines were in operation, showing visitors their many features and possibilities. The several representatives of the Company in attendance were President J. E. McKelvey, Advertising manager, R. T. Maston, Mechanical Dept., George G. Ely, Sales Manager, W. G. McDowell, Sales Dept., C. B. Foster, and C. M. Jennings.

ANOTHER EXHIBIT of special interest at the N. E. A. meeting at Atlantic City was the R. A. Fife Corporation of Mamaroneck, N. Y. A full line of Peck, Stow & Wilcox machines and equipment as required

## Build Your Own PHONOGRAPH

Instructive—arouses pupils' enthusiasm—provides one of the best problems in cabinet making.

Let Your Pupils Build  
Choraleon Phonographs

We furnish, plans, blue prints, motors, tone arms, case material—in fact, everything required. Full instructions. Choraleon's have fine tone. Play any record.. Ask for particulars



**CHORALEON PHONOGRAPH CO.**  
321 7th St., Elkhart Ind.

# MAYDOLE HAMMERS



Adze Eye  
Nail Hammer



Machinists'  
Hammer



Blacksmiths'  
Hammer



Copperworkers'  
Hammer



Adze Eye  
B. F. Hammer

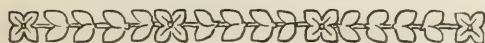
JUST A FEW OF OUR HAMMERS

All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request

THE DAVID MAYDOLE HAMMER CO.

NORWICH, N. Y.



## TRADE NOTES

in vocational schools and commercial shops for sheet-metal work was shown, also a display of benches and shop furniture, the product of E. H. Sheldon & Co.

## SUMMER ART STUDY

To STUDENTS AND TEACHERS all over the country, the announcement of the summer school of the Art Institute of Chicago comes as a welcome invitation to spend a profitable summer in art study. The Institute's inclusive program made possible by its large teaching staff, enables it to meet the demands of teachers, designers or craftsmen.

The school is housed under the same roof with one of the greatest of art museums, which is an unique advantage. Its collections of paintings, sculpture, prints and decorative arts present an unusual invitation to study. To browse in its art library, to paint landscapes in the dune country, to draw or model from the nude, to learn such crafts as gesso, batik, color printing and colored concrete—these give the summer student a rare opportunity to broaden and enrich his art-craft experience.

Specialists in  
Manual Training Lumber

**Maisey & Dion**  
**Hardwoods**

**KILN DRIED AND AIR DRIED**  
**OFFICE & YARDS 2349 TO 2423 So. LOOMIS ST.**

**TELEPHONES**

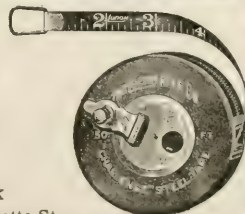
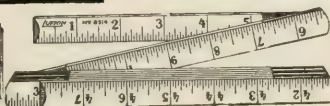
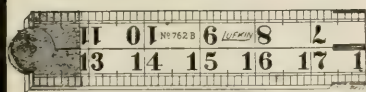
**CANAL 1830**

**CANAL 1831**

**CANAL 118**

**CHICAGO**  
**THE**  
**Great Central Market**

**LUFKIN**



**STEEL and WOOD RULES - - MEASURING TAPES**

Complete high grade lines

On Sale Everywhere. Send for Catalog.

SPECIFY—**LUFKIN**

**THE LUFKIN RULE CO.** Saginaw, Mich. New York No. 106-110 Lafayette St.





## CLASSIFIED ADVERTISEMENTS



*Do you want to sell or want to buy some school shop supplies? Do you want to employ a teacher? Do you want a new position? Advertise your wants in these classified columns. Rate 20c a line, minimum \$1.00.*

### GRADING CHARTS

**FOR MECHANICAL DRAWING** with Free Hand Lettering. Instructors who are using them say: They standardize the ranking of plates. They show the pupil clearly, the **why** and **where** of his grade with requisites for improvement. They **minimize** the possibilities of unfair grading. And they assist the instructor greatly in the final grading of plates. Postpaid in U. S. 1—\$1.75; 3—\$2.00; 6—\$3.50. Doz.—\$6.00. P. M. Spink, Faribault, Minn.

### UPHOLSTERY MATERIALS

**UPHOLSTERY SUPPLIES FOR MANUAL TRAINING**—We carry most things needed in the manual training departments such as, tools, imitation and genuine leathers, and upholstering supplies. Tray handles, catches and knobs, casters, mirrors, etc. Write for our Catalog. F. A. Rauch & Co., 410 So. Market St., Chicago, Ill.

**CUSHIONS**—You know your cushions will be made right when furnished by the Grand Rapids Cushion Company. Write for estimates on cushions and all kinds of upholstery supplies. Grand Rapids Cushion Company, Grand Rapids, Michigan.

**LEATHER AND IMITATIONS**, cushions any size or style to fit your chair or davenport, upholstery materials and supplies, also cabinet hardware, pulls and catches, mirrors, chest trimmings, art glass and other "hard-to-get" supplies for the manual training shop. Write today for new catalog. Thurston Manual Training Supply Co., Anoka, Minnesota.

### MANUAL TRAINING LUMBER

**AMERICAN WALNUT LUMBER**—We carry a stock of over two million feet of Walnut Lumber, consisting of all grades and thicknesses from  $\frac{1}{2}$ " to 4". Due to this large stock we are always in position to supply dry lumber for Manual Training use. Send us your inquiries. Frank Purcell Walnut Lumber Company, 12th Street & Belt Line, Kansas City, Kansas.

**AROMATIC TENN. RED CEDAR BOARDS**. Small shipments a specialty. Write us for prices delivered at your railroad station. Earthman Lumber Co., Murfreesboro, Tenn.

**MORGAN MANUAL TRAINING MATERIALS**—A perfect system of dry kiln enables us to give you lumber thoroughly dry. Carrying in stock large quantities of different woods permits us to fill your orders with the best selections. Write, sending us a list of the materials you desire. We will quote you attractive prices. Morgan Company, Oshkosh, Wisconsin.

**LUMBER**—Maisey & Dion, 2349 to 2423 South Loomis St., Chicago, Illinois, carry in stock a large and diversified stock of **MANUAL TRAINING LUMBER**. Fifteen years' experience with schools enables us to fill such orders satisfactorily.

**TENNESSEE AROMATIC RED CEDAR**—Selected Figured Red GUM. (St. Francis Basin Stock). Prompt shipment can be made. Special attention paid to Manual Training inquiries and orders. We also carry a choice assortment of Southern Hardwood lumber. George C. Brown & Company, Memphis, Tennessee.

### DRAWING EQUIPMENT

**DRAFTING ROOM FURNITURE**. Write for Description of Equipment which will eliminate all difficulties of caring for students supplies and the filing of drawings. Compact, neat and strongly built. G. & E. Mfg. Co., Box 245, Quincy, Illinois.

### BLUE PRINTS

**GRANDFATHER'S CLOCK**—Blue prints, finishing material and instructions. Also works, dial, weights and pendulum can be purchased from us at surprisingly low prices. Send for particulars of our attractive offer. Clock Company, 1666 Ruffner St., Philadelphia, Pa.

### ELECTRIC GLUE HEATERS

**THE SAFETY FIRST ELECTRIC GLUE HEATERS** are economical, safe, reliable and inexpensive. Best for Manual Training and Print shops. Write for circular. Safety Electric Heater Co., Faribault, Minn.

### SCHOOL SHOP SUPPLIES

**"HARD-TO-GET" MATERIALS**—Here they are—Nifty pulls and catches, costumer hooks, mirrors, leather and imitations, upholstery supplies, tea wagon wheels, etc., any size or style cushion for your chair or davenport. New catalog. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

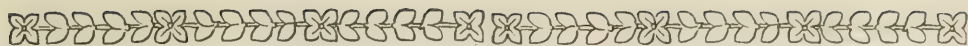
**SODERING SUPPLIES**, including the famous Allen Non-Acid Sodering Fluxes—in stick, paste, salts and liquid form; handy soder sets, sodering tools, aluminum soder and flux. As pioneers in the development of fluxes that far surpass muriatic acid, in every way, and as the original exponents of non-acid fluxes, the House of Allen has for 25 years maintained a position of leadership in the Arts and Crafts concerned with sodering. Send for our Bulletins, L. B. Allen Co. Inc., 4584 N. Lincoln St., Chicago, Ill.

**"HARD-TO-GET" MATERIALS**—Here they are—Chest trimmings (coppered bands, nails, locks, cover supports, handles, casters, etc.), tea wagon wheels and casters, nifty pulls, upholstery supplies, etc. We make any size cushion for your piece. New catalog. Write today. Thurston Manual Training Supply Co., Anoka, Minnesota.

### ELEMENTARY HANDWORK

**TAWIDO LOOMS** with four treadles weave from 12" to 20" widths. Desk and Table Looms, 6" to 12". Tapestry loom 34". Shuttles, Yarnwinders, Warp Frames. Instruction in pattern weaving and tapestries. Elma M. De Neergaard, Tawido Looms Studio, 23 Union Square West, New York, N. Y.

**EVERYTHING FOR ELEMENTARY HANDWORK**—Also for basketry, weaving, bookbinding and chair caning, Mounting boards, Waldcraft dyes, crayons, burlap, scissors, punch and eye sets. Thomas Charles Co., 2249 Calumet Ave., Chicago.



## BOOK NOTES

**S**PEAKING of the books written by Professor Ira S. Griffith, a visitor said the other day, "I don't see how he writes so many; and each seems better than the last." The appropriate reply to this observation is that he writes them one at a time, and when he is writing a book he doesn't like to think of anything else. He concentrates his efforts on one at a time and so the books grow in value as he grows in power. Already the demands are coming for his next book, which is expected to deal with the organization and administration of the manual and industrial arts.

About three months after his last book appeared Mr. Griffith received a letter from one of America's leading city supervisors which contained the following:

"At this time I also want to tell you how much I enjoyed working with your new book, 'Teaching Manual and Industrial Arts.' This past summer I had a class of 20 men and 2 women who are teaching manual training in the elementary schools and who were preparing for advancement. Your book was just the thing I wanted and to my mind was the best thing published which in any way carries over current ideas in psychology and pedagogy to manual manual training practice. The material you have used to illustrate these ideas is exceptionally good and thru it all you are so sane and sensible as to the practice and aims of our work."

**T**HE next new book to be issued by The Manual Arts Press is *Farm Blacksmithing* by John F. Friese of the Technical High School, St. Cloud, Minn. This book is the result of the experience of Mr. Friese in teaching the subject to classes of farmers who have come to the high school for short courses in the winter. He found that the usual city course in blacksmithing did not meet his needs. It failed to include some problems met by the farmer and it included many that would never be encountered in a farm repair shop. He therefore set himself the task of discovering just what processes the farmer does need to know and just what forms he needs to make. The result is about thirty problems accompanied by as many pages of carefully prepared descriptive matter, to which is added some valuable text matter. Every problem is of practical use on the farm and each is shown in the book by a detailed working drawing—very clear and complete—and most of them by photographs. The problems include chain links, ring bolt, strap bolt, rope cleat, clevis, scalding hook, singletree hook, slip hook, meat hook, wagon wrench, pile band, door

pull, spring seat hook, gate hook, gate hinge, baled hay hook, square grab hook, blacksmith's tongs, hoof parers, ice tongs, cold chisel and hand punch.

In this book as a whole will be found the answer to new demand in the shop textbook field. The plates for this book are now in process of being made, and it is expected that the book will be completed next month.

**A** LETTER has just been received from the head of a commercial department in a large high school expressing approval of Janet Cation Thurston's *Personal Expense Book*. The writer says,

"Upon examination I find that this book will meet very satisfactorily the wants and desires of college and university students. The classification of expenditures is in sufficient detail and still not too extensive for the busy life of a student."

A student who will faithfully keep such a simple expense account thru his high school or college course will not only be likely to satisfy himself and his parents concerning expenditures but he will have established habits of accounting for funds entrusted to him and of giving thought to the proportion used for each class of items in the cost of living.

The popularity of *Mechanical Drawing Problems* by Berg and Kronquist continues to grow. It is an excellent textbook covering the first two years of high school work. The problems are well selected and cover a good variety of subjects. The Manual Arts Press is just issuing a new edition. The price is \$1.28.

**T**HIS is the time of the year when teachers of wood-working are thinking of building outdoor structures with their classes. Perhaps it is a poultry house or a hog cot or a play house or a garage or a ticket house for the athletic field or a waiting station for the electric car line. Whichever it may be, if any outdoor building is to constitute a part of the school work during the spring months the teacher will need *Carpentry* by Griffith and probably Griffith's *Roof Framing Tables* to go with it.

In case plans are to be made for the building the teacher will find *Architectural Drawing Plates* by Elwood very convenient for giving the conventions and standards for drafting, or if a more complete book is needed, *Progressive Steps in Architectural Drawing* by Seaman. All these will help to make the instruction more effective.

IMMEDIATE  
DELIVERY ON



## Drawing Instrument Sets

WRITE FOR CATALOG AND  
PRICE LIST TODAY.  
DO NOT DELAY YOUR ORDERS—  
SUPPLY LIMITED.

**FREDERICK POST COMPANY**

Dependable Supplies for  
Engineers, Architects and Schools.  
CHICAGO



*The largest selling  
quality pencil  
in the world*



## VENUS PENCILS

FOR producing light grays  
and deep shadows; for  
fine decorative work and  
rugged sketching, the su-  
perb Venus pencils are un-  
excelled.

17 black degrees, 2 copying

For bold heavy lines  
6B-5B-4B-3B

For general writing  
and sketching  
2B-B-HB-F-H

For clean fine lines  
2H-3H-4H-5H-  
6H

For delicate thin lines  
7H-8H-9H

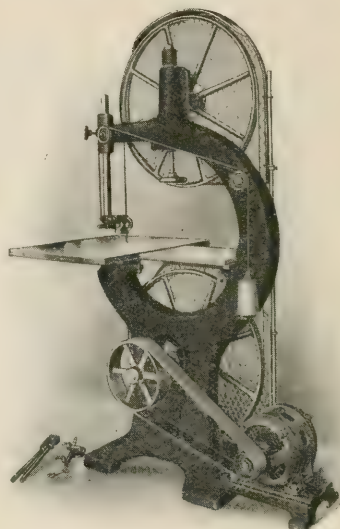
Plain Ends, per doz., \$1.00  
Rubber Ends, per doz., 1.20

American Lead Pencil Co.  
219 Fifth Ave., N. Y., Dept. A

EQUIP WITH



## Woodworking Machinery



**FAMOUS**  
36 Inch Wheel Band Saw

A STANDARD machine for com-  
mercial shop and one of our many  
machines especially suited to manual  
training needs. Motor driven, well  
guarded, accurate, and durable.

Fourteen thousand of these splendid  
band saws now in use.

Put your problems up to  
Our Engineering Division

*Ask for Catalog No. 20*

**THE SIDNEY TOOL CO.**  
Sidney, Ohio



# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.  
WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City  
EDITORS FRANK M. LEAVITT Associate Superintendent Public Schools, Pittsburgh, Pa.  
WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON.

Published monthly by The Manual Arts Press, 237 N. Monroe St. Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

---

## CONTENTS

---

THE READJUSTMENT OF THE TRADESMAN TO THE BUSINESS OF TEACHING.....	E. E. Ericson 345
THE EDUCATIONAL SITUATION IN HAWAII.....	Wilson H. Henderson 349
“PUTTING OVER” MACHINE SHOP EDUCATION IN SMITH-HUGHES CLASSES (Illustrated).....	Frank C. Vincent 352
THE USE OF MODELING CLAY IN THE MECHANICAL DRAWING ROOM (Illustrated).....	W. W. Sturtevant 356
EDITORIAL REVIEW FOR THE MONTH.....	360
The National Society takes Its Bearings—The Foreman as a Teacher—Another Opportunity for the Junior Red Cross.	
A POINT OF VIEW.....	Arthur Dean 362
A Conference on Establishing a Vocational School for Machinists.	
WASHINGTON CORRESPONDENCE.....	William T. Bawden 365
Special Conference on Supervision—Helping the Shop Teacher Thru Supervision—The Baltimore Convention—Address by Dr. Snedden—The Determining Aims.	
IN FOREIGN COUNTRIES.....	Charles A. Bennett 368
The Educational Crisis in England—Protests Against False Economy—Manual Training Progress in England.	
PROJECTS, PROBLEMS AND NOTES.....	370
Helping Students to check their Lumber Bills—A good Printing Project—Porch Swing—Glove Box—Problems in Forging.	
CURRENT PUBLICATIONS.....	376
FIELD NOTES.....	IV
Around New York—In California—Southeastern News—Minnesota Notes— Manual Training at Butte, Montana—Personal Items.	
TRADE NOTES.....	XXVII
BOOK NOTES.....	XXXIX

*This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.*

---

Entered at the Post Office at Peoria as Second-Class Matter. Copyright, 1920, The Manual Arts Press.

---

## FIELD NOTES

### AROUND NEW YORK

THE apprentices of the printing trades of New York City are receiving a systematic practical and academic training thru the joint efforts of the unions and employers. This training is given in the School for Printers' Apprentices located at 494 Sixth Ave. Visitors who have travelled thru the country state that it is the most efficient trade school in the United States.

It may be of interest to state the development of the school. For many years the Hudson Guild, one of the oldest neighborhood associations in New York, had maintained a little printing school where the boys of the neighborhood were instructed in the rudiments of the printing trade. It was a printing house district, where many of the big printing offices of New York were situated, and the boys of the neighborhood were employed in them in some capacity. That was why the Hudson Guild started its little printing school instead of a school for some other trade. The school was well and intelligently managed. For that reason it grew and came to be appreciated by the employing printers of the neighborhood. So, when "Big Six" and the employing printers had reached the point where they were ready to confer with each other on the subject of educating printers' apprentices in the trade, they turned to the management of the Hudson Guild for information and advice.

That was the beginning of the school: a combination of "Big Six", the typographical union interested in the welfare of the worker, the employing printers anxious to secure a more highly trained class of workers and the settlement association, interested in the welfare of the boy and the making of him into a good citizen.

The school was organized under these auspices in 1913. Apprentices' employers were required to allow them one afternoon off each week to attend the school. The apprentice was required to give one evening each week of his own time to school attendance. Failure to attend the school would result in dismissal from his place of employment. If the apprentice showed lack of interest in his work, evidenced by failure to attend the classes of instruction, the union would refuse to recognize him as a proper candidate for initiation into the mysteries of the craft.

"Big Six" voted a generous annual allowance for the maintenance of the school. The employing printers' association, the Hudson Guild and the Publishers' Association of New York City (representing the daily newspapers), joined with liberal

appropriations. Today there are more than 800 registered apprentices to the printing trade in New York, and more than 500 of them are in regular attendance at the school. The term of apprenticeship in the trade is five years. The course of instruction in the school covers four years. The first year of apprenticeship is the elimination test. After the boy has served one year in the trade his abilities and capabilities are known to his employers, and he is recommended for the school. The theory is that if he sticks for a year he means business.

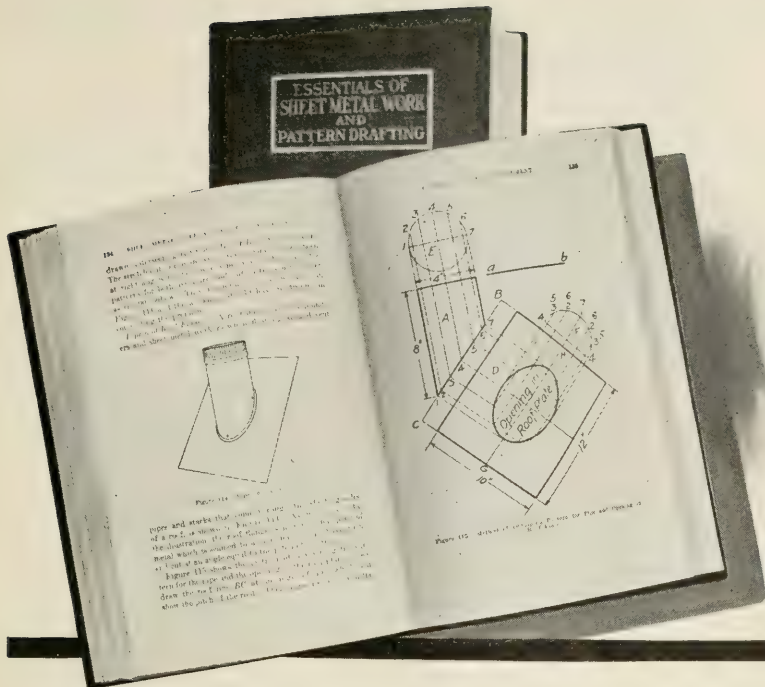
The equipment in the school consists of racks and cases of the best equipments of display and job type in addition to printing presses and type-casting machines.

There are several classrooms where the classes in English and other branches of the trade are at work while the boys in the mechanical departments are filling the big composing room. Every afternoon and every evening there are about 200 boys in attendance in the various classes.

Arthur L. Blue, an active member of Typographical Union No. 6, is managing director. At present the school is only appealing to the young men who are taking up the compositor's end of the printing trade. Later it is hoped to add presswork, linotype operation, photo-engraving, electrotyping, and all the other branches of the trade, as well as complete instruction in cost accounting.

The advantages of such a school over the ordinary so-called trade school or the manual training of the public schools are obvious. In the first place the instructors are practical, successful, expert followers of the particular trade they are teaching. Mr. Blue for instance, is the author and originator of the correspondence course which the International Typographical Union has had in operation for a number of years and which is open to any apprentice in any union office in the country. The lessons take the student thru the four-year course from the foundation of the trade to the finish. Beginning with punctuation and the proper use of the various marks, they carry on thru materials used in type composition, spacing, proofreading, simple display, common errors, standard forms of arrangement, for pages, cards, &c., proper proportion, measure balance, borders, color harmony, catalogs and book work, lockup, imposition, plates and processes, &c., until the apprentice graduates as a journeyman in the printing trade—one who can hold a union card and can fill any job.

AFTER ONE TERM the Haaren Co-operative High School has shown a growth of a trifle more than 47 per cent. The school started with a registration of



## Launching a Better Vocational School Plan

We are offering for one dollar each (subject to prior sale) five hundred copies of *Essentials of Sheet Metal Work and Pattern Drafting* and a copy of a *New Vocational Guide*.

*Essentials of Sheet Metal Work and Pattern Drafting* contains 176 pages and over 150 illustrations. It is bound in buckram and sells regularly for \$1.50. The *Vocational Guide* embracing Sheet Metal Working, woodworking and drafting should be on the desk of every vocational School Principal, Supervisor and Instructor.

These books bring home in a practical way, our method of standardizing these courses for the school shop. They show how to develop the work with modern machines and tools and plainly illustrate how to perfect all manner of seams and joints in sheet metal work.

This ad may not be repeated. Send a dollar bill with your name and address NOW and this combination offer will go forward postpaid.

Act now—we plan to sell only 500 copies with this offer.

*Please send me one of the five hundred copies of ESSENTIALS OF SHEET METAL WORK AND PATTERN DRAFTING and VOCATIONAL GUIDE EMBRACING SHEET METAL WORKING, WOOD WORKING AND DRAFTING—I enclose one dollar (\$1.00).*

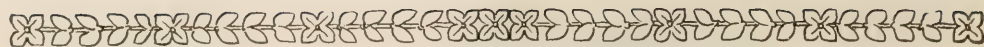
Name \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

## THE PECK STOW & WILCOX COMPANY

Mfgs. Machines and Tools for Sheet Metal Work.  
Mechanics Hand Tools.

SOUTHINGTON, CONN.





## FIELD NOTES—(Continued)

515 last term, and at present there are 758 on the register. Principal R. W. Burnham is confident that the thousand mark will be passed in September.

This school, which is the only one of its kind in the country, was formed by the grouping of all cooperative students thruout the city in one building. The system used is this: two pupils are "teamed" and while one is at work the other is at school. At the end of a week places are exchanged. In this way work with the business firm is never interrupted, as one pupil-worker is always "on the job."

Freshmen are not allowed to work during the first term, because they have not had sufficient training to enable them to hold a position. Several new courses have been introduced into the school, chief of which is the salesmanship course. Other new courses offered are a calculating machine course, a graphics course and a materials course.

SUPERINTENDENT HENRY SNYDER of Jersey City in a recent address, reviewed developments and pointed out changes that may be expected, during coming years, in vocational education. Vocational and trade training should be emphasized and extended. Pupils should be given an opportunity of entering prevocational and vocational courses, in order that they may become familiar with vocational processes, and that their adaptability to individual vocations may be discovered. There will no doubt be developed in the future a plan for general trade training in the schools by the cooperation of trade organizations with school authorities.

General fundamental training must be provided for in all cases. While we may give training for special occupations we must give such general training as will at the same time enable the youth to participate satisfactorily in all the duties of the citizen. Too great specialization and narrowness of training, lead to narrowness of view, and is contradictory and prejudicial to the social aim.

Special pains must be taken to inculcate in pupils a belief in the worthiness and dignity of labor. Education has placed emphasis upon the training which aims to improve the industrial and social conditions of the people. All labor cannot be called skilled, as that term is usually understood. It is difficult to escape the conviction that, if the impetus now constantly given to the youth to prepare themselves for skilled occupations continues as pressing and successful as it has been, if all the other forces now at work and to be added in the future continue to induce all to seek education, and if foreign laborers are excluded, the time will come when there will not be sufficient laborers who lack

education. Pupils should be taught that all honest work is worthy and honorable to the educated man.

Governor Miller recently recommended to the legislature, in the interest of economy, the repeal of the continuation school law. The bill has met with overwhelming opposition. Facing defeat the supporters of the bill are now suggesting that a substitute bill be reported amending the present law by reducing the age limit from eighteen to seventeen; accepting evening school attendance in lieu of continuation schooling and extending the time for the law to come into complete operation from September 1925 to 1927, or even later. There is good reason to believe that the law will not be changed.

The law as it now stands provides that employed minors, between the ages of fourteen and eighteen, who are not high school graduates, must return to school for four hours instruction weekly, the local school authorities having until September 1925 to comply fully with the law. Reports from all parts of the state show that an effective beginning has been made in enforcing the law, and that generally it has been accepted by employers and employees in a spirit of cooperation. In this, New York is having the same experience that other states had in putting similar laws into effect.

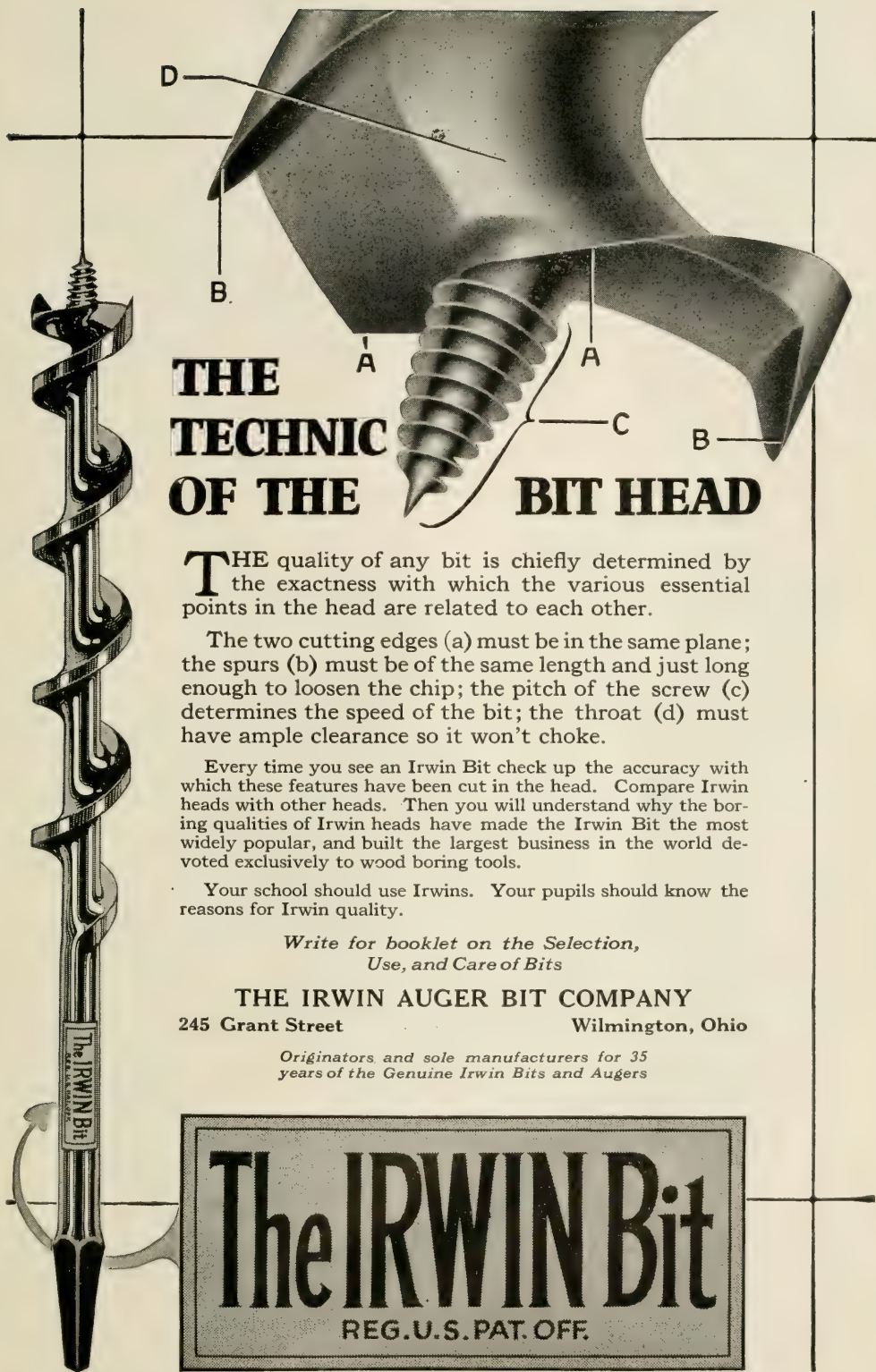
—W. H. DOOLEY.

## IN CALIFORNIA

WHILE many other cities in the state of California were steadily marching ahead in manual and vocational work, one city—a city which by all rules should have been in the vanguard of progress—was marking time. This was the city of Berkeley, the seat of the great University of California, an educational institution which boasts of being the largest in this country, having a student body which last year numbered over ten thousand registered students receiving instruction on its campus.

For several years the Berkeley public schools went along without any supervision of its manual training, and up to last year it had had no vocational work. The remarkable thing about this is that the manual training did not undergo a complete decline; on the contrary, it maintained a fair degree of efficiency—which is much to the credit of the Berkeley manual training teachers.

Then last year, after much searching and weighing, the Berkeley Board of Education elected W. W. Patty to head-up the manual training work, and in addition, to establish the part-time education which became compulsory by state legislative



## THE TECHNIC OF THE BIT HEAD

**T**HE quality of any bit is chiefly determined by the exactness with which the various essential points in the head are related to each other.

The two cutting edges (a) must be in the same plane; the spurs (b) must be of the same length and just long enough to loosen the chip; the pitch of the screw (c) determines the speed of the bit; the throat (d) must have ample clearance so it won't choke.

Every time you see an Irwin Bit check up the accuracy with which these features have been cut in the head. Compare Irwin heads with other heads. Then you will understand why the boring qualities of Irwin heads have made the Irwin Bit the most widely popular, and built the largest business in the world devoted exclusively to wood boring tools.

Your school should use Irwins. Your pupils should know the reasons for Irwin quality.

*Write for booklet on the Selection,  
Use, and Care of Bits*

**THE IRWIN AUGER BIT COMPANY**

245 Grant Street

Wilmington, Ohio

*Originators, and sole manufacturers for 35  
years of the Genuine Irwin Bits and Augers*

**The IRWIN Bit**  
REG. U.S. PAT. OFF.



FIELD NOTES—(Continued)

enactment, and to organize vocational courses under the provisions of the Smith-Hughes Act. This was a big undertaking for a new man; but Mr. Patty had had much previous training and experience, and his work has already shown him more than equal to the task.

Mr. Patty is a graduate of Iowa State Teachers College of Cedar Falls, from which institution he received a Bachelor of Arts degree. And a little over a year ago, he received his Master's degree at California University where he specialized in vocational education. In his present position, Mr. Patty holds the combined title of director of vocational education and principal of the part-time high school.

With the coming of the new director to the Berkeley schools, there were some changes in the teaching staff of the manual training department and there were also several additions. Samuel Hughes, who had been teaching woodworking in the elementary schools, but who had had manufacturing experience involving machine-shop work, was promoted to the high school as instructor in machine-shop practice, and F. L. Stuart, who had been teaching machine-shop practice, was given the post of teacher of mechanical drawing. As new teachers on the high school staff to teach both industrial arts and vocational courses, there were added Howell D. Perry to teach auto practice, R. E. Stevenson to teach electricity, and Samuel Love to teach in woodworking and pattern making. Each of these new men came to the position with extensive commercial shop experience; and as for teaching experience, Mr. Stevenson had taught for several years at the Polytechnic College of Engineering, and the other two men had received their training and practice in the training classes for trade and industrial teachers conducted under the joint control of the University of California and the California State Board of Education.

The result of these additions to the manual training and vocational staff of the high school, together with Mr. Patty's efforts in the matter, has been a marked increase in the registration in this department; the latest records show an increase of over 200 per cent. A further result of the new lease on life which the industrial department has taken since the change is the provision for a spacious industrial arts wing in the new high school building. This building is now under construction. The industrial arts wing provides work rooms each about 50 by 100 feet for auto repair, machine-shop practice, electrical work and woodwork on the ground floor; and furnishes commodious study rooms and draw-

ing rooms on the upper floor. Attached to each shop is a tool room. The shops and tool rooms are so arranged as to allow access from one shop to another thru the tool rooms. Thus, if need be, any one tool room may be made to serve any of the shops, and full co-operation between the shops may be established without the danger of confusion or disorder.

In the elementary schools several changes took place with Mr. Patty's coming. Some of these were due to promotion as in the case of Mr. Hughes; and others to vacancies caused by removal from Berkeley. Among those who, since the change, were added to the elementary manual training staff are John J. Frick and A. E. Taylor.

Among those who left shortly after the change was Benjamin H. Morrison. Besides teaching manual training in the Berkeley schools and studying at California University toward his doctorate degree, Mr. Morrison also assisted in the University trade and industrial teacher-training work, the latter work being carried on in the evenings. In part, at least, as a consequence of his experience in the teacher-training work, Mr. Morrison was elected last summer to the position of state supervisor of industrial education for Nevada, which position, by the way, he is filling with considerable credit. In fact, so well has Mr. Morrison performed his work, that last November when someone was needed to take charge of the Federal and State joint plan and the Nevada State work for the rehabilitation of injured soldiers, sailors and marines, Mr. Morrison was asked to accept this additional responsibility.

One of the efforts which the new regime has stimulated in Berkeley is the attempt on the part of the elementary school manual training teachers to formulate an acceptable statement of their proper objectives and the methods by which they propose to reach these objectives. At the present writing, this statement is only partially complete. The main objective is expressed in Horace A. Hollister's statement that "It is the aim of society through the public school to insure all the people the greatest degree of efficiency, physically, intellectually, morally and industrially, of which they are individually and collectively capable." Each of the phases of efficiency—physical, moral, vocational, etc., are then discussed. In order to insure a proper selection of projects to help realize this aim, the committee set up five conditions which may briefly be stated as: (a) direct appeal to the pupil's interest, (b) adapted to his physical development and acquired skill, (c) offers opportunities for correlation



# 40 Years of Progress with Fine Tools

*"--when typewriters were curiosities."*

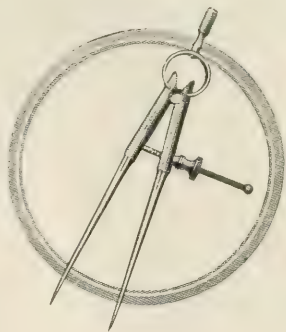
Forty years ago, when the typewriter was still a "new-fangled contraption", machinists were beginning to learn what so many thousands know today—that Starrett Tools are made to insure complete satisfaction to the men who use them.

"Tools just a little better than were ever made before" was the Starrett idea in 1880. It is the same in 1920. That explains why Starrett Tools have had so big a share in the industrial development of the country.

If you're interested in fine tools write for a copy of Catalog No. 22 "EF."

## THE L. S. STARRETT COMPANY

*The World's Greatest Toolmakers*  
*Manufacturers of Hack Saws Unexcelled*  
ATHOL, MASS.



1920



# Use Starrett Tools



42-122



## FIELD NOTES—(Continued)

with other school work, (d) suitable for home use, (e) results of answers to a questionnaire. This questionnaire inquires of the pupils as to his use of tools at home or in play, the things he has made, furniture or house repairs he has done, what he has learned in manual training to help him in any gainful occupation he is pursuing, repairs which are needed at home.

As to methods of work, the committee seems to favor decidedly the project method. It advocates work which involves a large variety of materials and processes. The course so far completed in outline includes work for the fourth to the sixth grades inclusive. It embraces work in paper and cardboard, clay, reed and raffia, bookbinding, coping-saw work, simple woodwork, tin work, cobbling, and tope tying.

—CHAS. L. JACOBS.

### SOUTHEASTERN NEWS

ONE of the big educational projects in the South is now under way in Atlanta, Ga., and is being directed personally by James F. Cannon, state supervisor of trades and industries. Mr. Cannon contributes the following report of the project: "This work is an effort to establish a part-time school for boys and girls engaged in commercial occupations in the down-town districts. It is being sponsored by the Civilian Club as their educational contribution to the city. The executive committees of the Retail Merchants' Association and the Y. W. C. A. have endorsed the plan and pledged their support.

The school will be conducted at the Commercial High School Building under the direction of Mrs. A. T. Wise, who is principal of that school. The city Board of Education has already endorsed the plan; and made ample financial provision for any form of industrial work provided for by the State Board of Vocational Education. At the present time enrollment cards are being distributed among the various business organizations in town, asking for information relative to who would like to take the course and what subjects are desired. As soon as this data can be assembled the classes will be organized and work begun."

MISS JUNE T. SCHNEIDER has been appointed assistant supervisor of trade and industry for Georgia; and assumed her duties on February 15. Her work will be largely that of directing and organizing part-time schools in city and mill districts. Miss June is well qualified and has had a broad experience in this line of work in other fields.

O. C. SKINNER has been appointed director of the industrial evening classes at Augusta, Ga.

Mr. Skinner is one of the best school men in the state and is thoroly practical and well qualified in every way. Classes in moulding, car repairing and inspecting, mechanical drafting, and auto mechanics are in operation. The auto mechanics class meets in the assembly room of the Automotive Protective Association, and the practice work is done in the shops of that Association.

THE MASTERS' BUILDERS' EXCHANGE of Savannah in cooperation with the city and state Boards, is promoting courses in practical carpentry and shop mathematics. The classes are growing rapidly and the results are highly satisfactory. Classes in industrial chemistry and drawing for machinists are being conducted at the Chatham High School. A teacher's training class in which thirteen trades are represented is being conducted in the city for the future benefit of the work.

A SHEET-METAL CLASS has been in operation at the Tech. High School in Atlanta for over one and one-half years. At a recent luncheon and smoker, the master sheet-metal workers of the city presented the class with \$1,000 worth of sheet-metal equipment. The presentation was made by Mr. Knox of the firm of Knox and Maier. In speaking, he assured the hearty cooperation of the workers in every way, even to the extent of more equipment, if necessary.

J. F. CANNON'S "twelve points" to the industrial teachers in Georgia are,

"Remember your educational efforts are direct."

"They must function in the daily life of the student."

"They must be an integral part of what he is doing."

"They must be worth while."

"Watch your lesson plans."

"Watch your progress."

"Be definite."

"Prepare well."

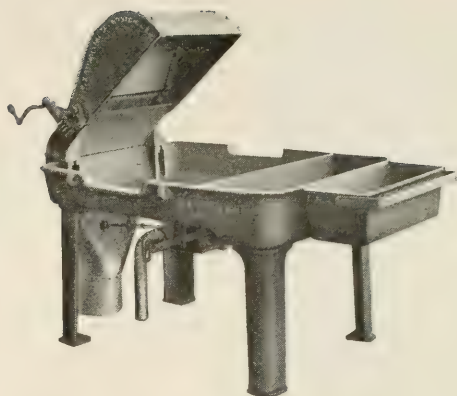
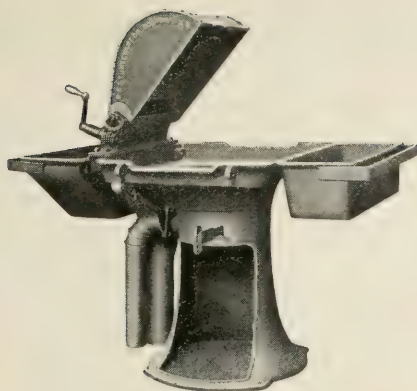
"These men have no time to lose."

"They have lost too much already."

"A great responsibility is resting on you."

"Are you meeting it?"

THE EMPLOYEES of the Carolina Cotton and Woolen Mills of Spray, N. C. made a request last September that they be given a chance for mental improvement and for a better opportunity for advancement in their work. In response to these requests, the Carolina Business Training Course was organized. A chairman, secretary-treasurer, an executive committee, and plant representatives were elected. Using text-books and making problems that would apply to the textile mills, the



## Sturtevant Stationary Forges

Are built in sizes and types to cover the entire range of forge work. Their design, construction and wide range of adaptability has won pronounced approval from instructors in the many technical and manual training schools where this equipment is used. It is approval based upon satisfactory performance. The fact is that these forges are easy to work with, convenient, and trouble proof. The many valuable qualities of these forges tend greatly to inspire confidence and interest in the student. Make a personal investigation of an actual installation and reflect with confidence upon the organization back of Sturtevant equipment. Communicate with us and we will gladly cooperate.

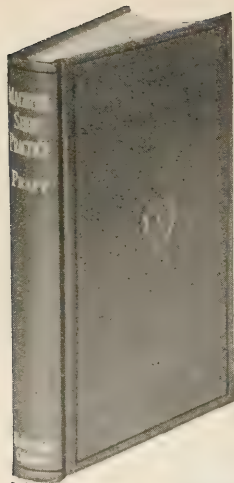
*Ask about our complete Forge System.*

### B. F. STURTEVANT COMPANY

HYDE PARK, BOSTON, MASSACHUSETTS

AND ALL PRINCIPAL CITIES





Of this book a state director of Industrial Education wrote:

"This, in my estimation, is the **BEST BOOK** for use in day trade classes or evening classes that I have seen." The capitals are his.

## Elementary Machine Shop Practice

BY JAMES A. PRATT  
*Director Williamson Free School  
of Mechanical Trades*

The extended detail of the large machine shop is based on a certain number of elementary principles which are applied to the doing of bench work, and to the operation of machine tools. The beginner in machine work should master thoroughly a few fundamentals and on this foundation build his knowledge of the trade. In this book are described the principles underlying the operation of various machines, which will be of value to apprentices, students, workmen and teachers. The book is a well written, fully illustrated presentation of the fundamentals of the machinists trade. 325 pages, 15 tables, 201 illustrations.

5¼x8¾ cloth. Postpaid \$2.50.

IN PRESS

## PATTERN MAKING

BY EDWARD M. McCracken  
*Head of Woodworking Department  
Johnson School, Scranton, Pa.*  
and

CHARLES H. SAMPSON, B. S.  
*Head of Technical Department  
Huntington School, Boston, Mass.*  
*Author: Mechanical Drawing and Practical  
Drafting; Woodturning Exercises; Algebra  
Review; Instructor, Correspondent Division,  
Massachusetts Department of Education.*

120 pages, 30 plates, 84 text illustrations, 10¾x8 cloth.

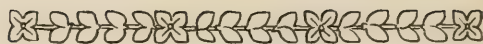
*Examination copies on request.*

## D. VAN NOSTRAND COMPANY

PUBLISHERS.

8 WARREN STREET

NEW YORK



### FIELD NOTES—(Continued)

course was put into operation. The executive committee selected six men from their own organization who were best fitted to give the work wanted. The subjects given were as follows: teamwork, handling a man, organization, machinery and materials, production records, and management. Without any undue effort on the part of the promoters, 130 of the employees signed up for the course. One hundred students completed the work and received certificates at the end of the three months.

The management of the mills feel that the work done by the course was unique and lasting. It gave over 100 representative employees (about 3 per cent of total force), scattered thruout the plants, a broader view of business management and their own local problems; and, of course, this served to bring the management and the operating force closer together. This developed a better spirit of co-operation and team work. Testimonials from the students were to the effect that it disclosed to them their weak points, gave inspiration to better perform their work, and a very concrete visualization of a large organization and its inner workings.

—FOREST T. SELBY.

### MINNESOTA NOTES

THE high school at Princeton, Minnesota, is completing the installation of a manual training department. Three rooms on the first floor are being used for this purpose. A good equipment for the woodworking, mechanical drawing and finishing rooms has been purchased. In addition to the high school pupils, those in the seventh and eighth grades also receive instruction in the new department. Alfred Martinson, a last year's student at Bradley Polytechnic Institute, is the instructor in charge of the work.

THE DAY SCHOOL activities at Dunwoody Institute have recently reached a new peak, with 875 students in the nine departments. Thirteen distinct groups are now receiving training. All these groups are handled on the unit basis. The wide diversity of interests is evident in the list of groups, which follows:

1. Re-education of men injured in industry (sent by the Division of Re-Education of the Minnesota Department of Education.)
2. Rehabilitation of men injured in the late war (sent by the Federal Board for Vocational Education.)
3. Dull-season bricklayers (sent by the Contractors' and Bricklayers' Union No. 1).

# STOUT INSTITUTE

Summer Session June 27—August 26, 1921

The following courses are offered

## VOCATIONAL EDUCATION—7 Courses

For directors and teachers of State and Federal aided Vocational Schools

Administrative Problems	Principles of Education	Teaching Vocational and Industrial
Citizenship for Vocational Schools	Principles of Teaching	Classes
Organization of Home Economics		Vocational Education

## INDUSTRIAL ARTS—28 Courses

For teachers and supervisors of Industrial Arts and Manual Training in elementary and secondary schools junior and senior high schools and for Vocational School teachers.

Auto Mechanics I, II	Carpentry	Machine Shop I, II, III
Bricklaying and Cement	Electrical I	Millwork
Drawing	Elements of Woodwork	Patternmaking
Architectural I, II	Forging I	Printing I, II
Elements of Mechanical Drawing	Forging II (Incl. Oxy-Acet. Weld.)	Sheet Metal I, II
Machine Drawing I	Foundry	Woodfinishing
Machine Drawing II	Furniture Upholstery	Woodturning
Cabinet Making	Grade and Prevocational Woodwork	

## HOUSEHOLD ARTS—26 Courses

For teachers and supervisors of Household Arts for dietitians and for institutional directors.

Chemistry	Clothing I, II, III, IV	Home Nursing
Food	Cookery V (Experimental)	Household Physics
Textile	Dietetics I, II	House Management
Qualitative Analysis	Dressmaking and Drafting (Adv.)	Institutional Management
Color and Design II	Food Analysis	Interior Decoration
Clothing I, II, III, IV	Food Study	Microbiology
Costume Design	Home Marketing, Cookery and Sewing	Textiles
Community Hygiene		

## DEGREE AND DIPLOMA ACADEMIC WORK AND SCIENCE—18 Courses

For Stout two-year course graduates and others studying for the Bachelor of Science degree in Industrial Arts or Household Arts and for those studying for the diploma.

English III	History, Modern	Psychology I
English IV	Modern Industry	Psychology II
Home and Social Economics I, II, III, IV	Materials of Construction	Psychology, Child
History, Industrial	Mathematics I and II	Public Speaking
	Physics I	Sociology

## PHYSICAL TRAINING—5 Courses

For athletic coaches and others interested in athletic games and swimming.

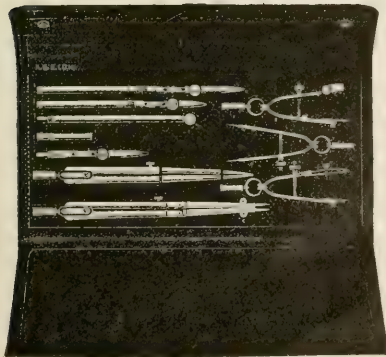
Athletic Coaching	Basketball	Swimming for Men
Football	Track and Field	Swimming for Women

For catalog address

L. D. HARVEY, Pres.

STOUT INSTITUTE

Menomonie, Wisconsin



### MINUSA

(Trade Mark)

### DRAWING INSTRUMENTS

Made in the U. S. A.

Modern American methods of quantity production have enabled us to place on the market this line of drawing instruments (which possess a high degree of excellence) at a price within the reach of the Manual Training Student.

PERFECT SATISFACTION AT MODERATE COST

Price list sent on application.

KEUFFEL & ESSER CO., HOBOKEN, N. J.

# Bradley Institute

SUMMER SESSION

JUNE 20—JULY 22, 1921

## COURSES:

**Automobile:** Mechanism, Electricity.

**Drafting:** Architectural, Freehand, Mechanical, Machine Design.

**Education:** Psychology, History of Manual Arts, Continuation School, Vocational Guidance, Methods.

**Metalwork:** Junior High School, Forging, Sheet Metal, Machine Shop.

**Woodwork:** Carpentry, Furniture Making, Millwork, Patternmaking, Turning.

**Also: English, Home Economics, History, Mathematics, Science and Sociology.**

## FACULTY:

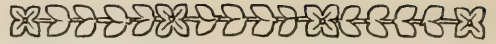
All shop and drawing instructors have extended trade and teaching experience in their lines. Others hold degrees from the best colleges and universities.

## BUILDINGS AND EQUIPMENT:

Five buildings, large shops, ample equipment, library, gymnasium, women's dormitory, cafeteria.

*For Summer Session Bulletin, Address  
Supt. Summer Session*

**Bradley Polytechnic Institute**  
Peoria, Illinois



## FIELD NOTES—(Continued)

4. Part-time garage apprentices (sent by the Garage Owners' Association).

5. Part-time printing apprentices (sent under contract with the Typothetae, the Typographical Union and Dunwoody).

6. "In-and-outers" who return for advanced trade training.

7. Farm-tractor operators.

8. Tractor operators for city (sent by the Civil Service Department).

9. Instructor training group (sent by the College of Education, University of Minnesota).

10. Farm mechanics.

11. Regular day-school students.

12. Special short-course students.

13. Prevocational students (sent by public school principals).

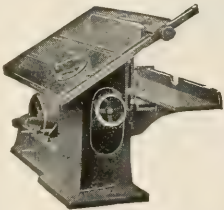
## MANUAL TRAINING AT BUTTE, MONTANA

THE department of manual training at Butte, Montana, under the direction of Carl E. Warner, has been making steady progress. It has grown in the past six years from six teachers to fourteen. There are five in the high school, four in the junior high school, and five in the grades. Mr. Warner says, "We had 'hard going' to keep the corps filled up during the War, but we are back to normal now.

"My work now includes the direction of the continuation and part-time work and the evening industrial school as well as the manual training work of the district.

"Our school funds here depend upon the taxes on the net output of the mines. This year the mines have been down most of the time, which reduces our income to the extent that we found it necessary to close our part-time and Americanization schools for this year. The evening industrial school, which is reimbursed by the Federal Government and the state, is, of course, not effected.

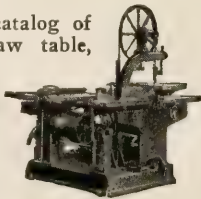
"Just now we have between fifty and sixty enrolled in the evening classes. The courses offered this year are shop mathematics and blueprint reading by one teacher, mechanical drawing, sheet-metal pattern drafting for boiler makers and tin workers, automobile ignition and wiring, and machine work, both beginning and advanced. For the auto ignition and wiring, the most difficult class to handle, I have a garage owner who is an expert machinist with unlimited training and experience in the work. He is willing to come to us during the slack season. The classes are all going well with regular attendance. The classes meet from seven to ten two evenings a week. The



## Crescent Wood Working Machines

are the tools your students will eventually use so give them the opportunity now of learning about this splendid line of wood working machinery.

Send today for our catalog of band saws, jointers, saw table, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinders, borers, hollow chisel mortisers, Universal wood workers.



**The Crescent Machine Co.**

46 CHERRY ST.

LEETONIA, OHIO



# Manual Training Magazine

MAY, 1921

## THE READJUSTMENT OF THE TRADESMAN TO THE BUSINESS OF TEACHING

E. E. ERICSON

Director of Manual Training, Okmulgee, Oklahoma

**D**URING the acute shortage of industrial teachers in the years 1917 and 1918, which was due to the enlistment of the men into the war service, and also to the selection of other occupations by the teachers, an unprecedented number of shop men gained admission to the field of teaching, going directly from the trades and industries. Today only a few of these teachers are to be found in the schoolroom. The great majority of them failed to make good or even mediocre teachers, and, as a consequence, have been forced to return to the trade.

While it is true that many of these men were appointed to their positions only as temporary teachers, until the regular ones would return to their duties, it is also true that a great many more of them would have had the opportunity to remain in their new occupation had they not failed to connect up with their job. This failure of the mechanic who enters the teaching profession to carry out his work successfully is not a novel occurrence that belongs to this period only. It has always been true that out of many tradesmen who have taken up the work of teaching, only a few have become successful teachers. The experience of the last few years has only made this condition more apparent, due to the increased number of men from the trade who have tried their hand at the business of teaching.

What is the reason, then, that so many of the tradesmen who have left their

craft to enter the profession of teaching have failed to make a success? The answer might well be that they have proved themselves unfit to discharge the new duties that were placed upon them in their new occupation. This again leads to the question, What does a shop man who knows his trade thoroly, and who is a first class mechanic and a good man, need in addition to the knowledge of his craft in order to be a success in the schoolroom?

After some further analysis of this question it would seem to be a fair statement to say that the success of a mechanic of this class in the teaching profession is almost wholly dependent upon his ability and willingness to make a number of changes in his mental attitude, and to readjust himself to the many conditions that must of necessity be new and radically different from those under which he has been working, perhaps for a large number of years. In the following paragraphs an attempt will be made to number and discuss some of the most important changes and readjustments that a tradesman will be required to make as he enters the work of teaching if he would be successful in his new occupation.

### FROM A PRODUCER OF GOODS TO A PRODUCER OF TRAINED MEN

The shop man is thoroly accustomed to having his efficiency measured by the amount of the finished product he turns

out. The efficiency of an instructor in the school shop is not measured primarily by the weekly output of finished goods by his class. The articles produced are incidental tho necessarily of importance. The man who comes directly from the trade and into the schoolroom needs to consider seriously the fact that the production of trained men must be the foremost aim of the industrial teacher. Hence he must use his energy and ingenuity directly toward giving each man under his supervision a logical and connected course of instruction and practice, so that he may learn a certain trade or a certain phase of mechanical work thoroly, and in the shortest possible time. If this scheme interferes with the production of goods, it should cause the instructor no worry, since it is only a natural consequence of good shop teaching. Unless the teacher who has come from the trade reminds himself of this point continually, he is most likely to push production to the point where it will cause an injury to the man who is in training.

Occasionally the head of a school or the supervisor may decide that a certain number of articles of commercial value shall be produced for the school regardless of whether the stage of training that the students are in will justify the introduction of such work. Of course, the teacher may be helpless in such cases, but he should recognize this condition as abnormal and should do his best to remedy it as speedily as possible.

FROM RESPONSIBILITY OF OWN WORK ONLY  
TO THAT OF THE WORK OF CLASS

When a man works at the trade, he is held responsible for his own work only, both as to quantity and quality. When he becomes a shop teacher he must take upon himself the responsibility of the work of every student under his care.

If the students do not catch the method used in the demonstration it is up to the instructor to take the blame and start over again. If the interest is poor, the teacher must work out a scheme by which it may be improved. He is responsible for the progress that each boy in his care makes, or for the failure of his class to make the desirable progress. The burden in this connection is heavy, and only the fact that the man naturally likes responsibility of this kind can make him feel at ease in the work.

FROM BEING TOLD WHAT TO DO, TO  
TELLING OTHERS WHAT TO DO

The shop man is used to taking orders and carrying them out. The average shop man has had very little experience however, in giving orders to others and following them up until they are executed. As a teacher he must assume this responsibility; he must tell the student what to do. He must understand that he has the last word in the matter of methods and procedure in the shop. This attitude of mind must be acquired without mingling with it an air of arrogance which would ruin the sympathetic understanding between the teacher and the students.

FROM A DISCIPLINED PERSON TO A  
DISCIPLINARIAN

The adjustment mentioned here is closely related to that mentioned in the previous paragraph. As a mechanic in a shop, a man has certain rules to be governed by. He punches the clock when he arrives and when he leaves. He has to follow out certain methods of doing his work, starting and stopping machinery, etc. But he has no worry about whether these rules are carried out by everyone unless his personal convenience is involved, nor does he have to see that they are enforced. Neither is he directly con-

cerned with the ultimate purpose of these regulations. As long as he personally carries out the regulations that apply to him he is in good standing.

As an instructor, the man must look upon the problem of discipline from a different angle. He is now the one who must make the rules that are necessary, and he must follow them up to see that they are carried out. If the students are young, the problem of discipline sometimes takes on considerable proportion. If the teacher realizes his relation to the student in this respect, and uses his authority tactfully, he will have very little difficulty in controlling the class. Boys expect to be disciplined. They will soon lose their respect for the teacher who has not firmness enough in his character to keep order in his shop.

#### RESPONSIBILITY FOR EQUIPMENT

The man in the trade is ordinarily responsible for no part of the shop equipment except that which he himself uses. Here again the responsibility increases as he goes into the work as an instructor. Now he must keep in mind the equipment of the entire shop, must check up his tools at regular intervals, must have necessary repairs done, etc. This is by no means a small responsibility for the beginner. Unless he organizes a system by which he will receive help in this work from his students he will either spend an undue amount of his time in this routine work or he will soon have his entire equipment disorganized. With the tools and equipment in bad order, the atmosphere of the shop soon becomes such that no systematic work can be done.

#### RESPONSIBILITY FOR ORGANIZATION OF WORK

The problem of planning the work, and the organization of the subject-matter to be taught into units of instruction are

perhaps the most important tasks confronting the new teacher. As a worker in the shop he has had little or no responsibility for the organization of the work or the general plan of procedure. Now this matter alone will demand the closest attention and the sincerest application on the part of the man who is new on the job. The analysis and organization of trade and shop work is a large subject within itself. It can not be profitably discussed within the limits of this article. There is now much good literature available which has a bearing on this subject. It will suffice to state here that the teacher—the beginner as well as the one who has spent many years in the service—must be willing to give hours of study and concentrated attention to this subject if he wishes to make a success of his teaching. Haphazard and unorganized procedure in the shop will ruin the most favorable chance of success.

#### RESPONSIBILITY FOR BUYING MATERIALS

Here is another new responsibility to be added to the many that the teacher must be willing to accept. It is not always easy for the new man to know just exactly what and how much to buy. Oftentimes the materials to be bought have to be exactly and technically specified in requisitions, and these again handed into the supervisor's or the superintendent's office. Accurate estimates of all the materials needed are not always easily made. At the same time as the teacher must have enough stock on hand to last him thru a certain period, it would not be to his best interests or to that of the school to buy too much and have a large amount of materials on hand. Careful attention to this matter will soon put a person in a position where this work will not take up very much of his time. But when a man is looking ahead to see what awaits him in the bus-



iness of shop teaching he should not overlook the fact that the responsibility of buying and caring for material will likely be put on his shoulders in addition to the many others.

#### DEALING WITH BOYS INSTEAD OF MEN

All the contact that the mechanic has had with other fellows while at work is likely to have been with mature men. He has become accustomed to approach these men in a certain way, to use a certain kind of technical language, and to get a certain type of response of a professional nature. He is accustomed to assume that the conversation is based on a stock of trade knowledge and experience. As he enters the school shop the situation changes vitally in this respect. He will now deal to a large extent with immature boys. At the best, he must not take for granted that these boys have any of the shop experience or the technical background that he has come in contact with in the trade.

This condition seems to be extremely difficult for shop men to adjust themselves to. They will persist in expecting the beginner to profit by such trade language as they have learned to use among the fellow workers of their craft. It requires an entirely different mental attitude on the part of the shop man before he can come down to the level of the student and catch his view point in the work. Some men are more readily adjusted to this condition than others. In no case can a person be a successful shop teacher in the school until he has grasped this difference in approach.

#### INTEREST IN THE WELFARE OF THE SCHOOL

There is a broad, general responsibility with reference to the welfare of the students of the entire school that all instructors must partake of. The duties

connected with this demand that the teacher show an interest in the students outside of the schoolroom, and that he fall in line to help them in living up to the general rules and measures of various kinds which originate outside of his classroom. The teacher must be able to fit in as a part of the disciplinary force of the school system if he is to be looked upon as the best type of a man to have around.

It is not easy for an inexperienced person to tell how to act in all cases so as to carry out his duties in this respect. Some teachers make more valuable all around men than others. The main thing is, however, that the teachers will realize that there are duties of this type to be placed upon him, and that he must use his energy and have the will power necessary to carry them out according to his best judgment.

#### THE NEW WORKING DAY

The man who has spent eight hours a day in the shop and has had no worries about his work until the next day will find as he goes into the business of teaching that the time he must spend at work daily will not and can not be specified in his contract. It might have seemed that the teachers whom he has observed have had a "snap" job in this respect; since perhaps their actual teaching time per day has been much less than eight hours. But when he himself enters the work, he will find that the time spent in teaching classes is far from all that is required. There will soon be plenty of conclusive evidence that the successful shop teacher must spend all of eight hours and sometimes much more each day in direct application to his work. The teacher who would be successful in shop work must not measure his time by the clock. Neither is he likely to receive extra pay for putting in time that is not

specified in his contract. To do the work that requires attention will be the problem of the shop teacher; and the one who ever "catches up" with it is surely to be envied.

Whether the man in the trade voluntarily seeks admission to the profession of teaching or whether he is asked by a representative of a school which may be in need of him to consider the question of leaving his trade and becoming an instructor, it is only fair that he should have as much knowledge as possible of what is expected of him in his new position before he gives up the job he already has. For if a man is encouraged to make this change in his occupation, in ignorance of the problems that he will meet, he is more than likely to find that he is not fitted for the work which he has entered.

Consequently he will be forced to change back to his trade again. This process will prove costly both to the man who makes the changes, and to the school which has been the object of the experiment.

Even tho the tradesman who is being considered for a position as a teacher might not be able to tell in all cases whether he would succeed in making the readjustments necessary for his success in this work, he could at least tell whether he would consider it worth his while to set out to accomplish these new requirements. An attitude which would indicate a willingness to accept this challenge would go a long way as a preliminary qualification for the success of the tradesman who is about to enter the profession of teaching.

## THE EDUCATIONAL SITUATION IN HAWAII

WILSON H. HENDERSON

Consultant in Education, U. S. Army, Honolulu.

*We are sure that our subscribers will be glad to read the following letter from Mr. Henderson. Some may not have learned that after his successful demonstration of the efficiency of vocational training as a means of rehabilitating the wounded soldier, Mr. Henderson, then Major Henderson, left Fort McHenry, Baltimore, and became the civilian educational officer for the U. S. Army at Honolulu. This letter was written at our suggestion which was made in order that his friends might get the benefit of some of his recent observations.*

—THE EDITORS.

March 18, 1921.

*My dear Mr. Bennett:*

Instead of discussing education in these islands, I should much prefer to tell you of their beautiful scenery, their balmy climate and wonderful coloring; of the lunar rainbows; of the year round sea-bathing; of the beautiful hybiscus hedges blooming everywhere all the time; of the lizards chasing mosquitoes and other insects on the window screen; of the gorgeous colors of the native fish; of the awe-inspiring volcano with its lakes of sputtering splashing lava, and how we melted pennies in the sulphurous heat; of the rare old Hawaiian tapa and hand

made poi bowls we managed to purchase yesterday from an old estate. I could tell you of these without saying anything harsh or disagreeable or presenting any perplexing problems. In telling you of the educational situation, I shall be compelled to give you what appears to me to be a most complicated puzzle. It may not be so puzzling to others.

It is much easier to plan an educational program to meet conditions as we think they should be, and probably will not be, than to plan to meet conditions as they are and probably will be. The index to future conditions is undoubtedly to be found in the present situation and I

should like to emphasize the fact that the conditions described in the following paragraphs are not hypothetical but are real.

For every *two* children of Anglo-Saxon descent in the schools (both public and private) in the territory, there are *one* Filipino, *one* Spaniard, *one* Porto Rican, *three* Hawaiian, *five* part Hawaiian, *five* Portuguese, *four* Chinese, *sixteen* Japanese. Fifty per cent of the Anglo-Saxon children are in private schools. The majority of these children are from families who come to the islands on two or three year tours with the Army or Navy or on term contracts with commercial firms. One child in thirty-three in the public schools is Anglo-Saxon.

It is apparent from these statements that the educational problem in the territory is not the problem of educating the Hawaiian, nor is it the educating of the Anglo-Saxon. If, as eminent authorities have stated, the oriental is unassimilable, the Americanization of over fifty per cent of the children is impossible. If, as these same authorities tell us, the Anglo-Saxon cannot compete industrially with the oriental, then the white child is going to be seriously handicapped in his industrial career in these islands. These statements, however, have not shaken my confidence in the "melting pot."

The chief occupation is the raising and exporting of sugar and pineapples. These products are raised on large plantations, the labor being performed principally by Filipinos, Japs and Chinese. Compared with farm help in the States, this is cheap labor, and a very large part of it is unskilled. Both men and women work in the fields and with the exception of the plowing, the work is done almost entirely by hand with hoes, shovels, and knives. The laborers are housed in villages on the plantations and the planters provide

medical attention and the usual "welfare" activities. It need not be said that the standard of living in these villages is not what we usually term the American standard.

If the children of these oriental laborers are educated to the American standard of living, they will not work on the plantations under existing conditions. If the planter were compelled to pay the American farm hands' wages, he could not sell his sugar in competition with other growers. The prosperity of the planter is dependent upon cheap labor and he is caught between the demands for a higher standard of living for his laborers and the demand for cheap sugar and pineapples. This is not an appeal for sympathy for either the planter or the laborer; it is a statement of facts.

The railroads, the docks, the canneries and refineries, the banks, and the land are practically owned or controlled by a group of about twelve families. Strangely enough, these families are nearly all the descendants of the early missionaries that came to the islands. Naturally, this group has a large part in determining the public policies of the territory. It is quite probable that they will see to it that their wealth producing plantations are not rendered worthless by any educational policy that might be introduced. Not that they are more narrowly selfish than any other group of capitalists. On the contrary, they are progressive and try to be altruistic, but not to the extent of ruining their own business. In this case however, they are in a position to control the situation, and any plan for providing education to the children of the laborers in the islands must take this fact into account.

The sugar cane requires irrigation which calls for reservoirs, pipe lines, ditches, and flumes, water rights, etc. Cane matures in eighteen months, and



when it is cut it must be delivered to the refinery and crushed within about forty-eight hours or it is worthless. This requires the laying of temporary tracks and the use of engines and cars. The small farmer with little or not capital cannot undertake such projects.

This does not mean that there are no small farmers. On the contrary there are many small patches of rice, bananas, papaiæ, and taro but they are cultivated by orientals in a manner that would not attract an American. No educated white man would wade around all day in mud and water to his knees planting rice or taro (the plant from which poi is made).

The building trades, which usually constitute the main point of attack for industrial education, have their limitations. The number of plastered buildings in the islands is negligible. Brick work is a rare sight. Plumbing is quite crude as no protection from frost or freezing is necessary. With the exception of volcanic rock, all building materials must be brought from the mainland.

There are no minerals in the islands. There is no timber to be cut into lumber. There are no native industries or crafts to be developed for their commercial value. Fishing is done and the markets controlled by Japanese. One particularly remunerative occupation is that of divorcing tourists from their surplus funds. This occupation does not, however, lend itself readily to the purposes of vocational education, nor do the necessary qualifications come thru training. The requisites of success are gall, a poker face, an absence of conscience, and a supply of victims. Of the latter there is plenty.

There are difficulties to be met in addition to those presented by the diversity of races and the limited number of occupations. The total population of the territory is approximately 250,000. This population is distributed in five principal

islands. Inter-island transportation is by sea-going vessels, which make trips from island to island about twice a week. A trip from one island to another is about like crossing the English Channel. The nearest port to Honolulu is six hours. Each island must therefore have a somewhat self-contained school system insofar as elementary and high schools are concerned.

Honolulu is 2100 miles (7 days) from the nearest mainland port, which makes it impracticable for the territory to depend upon mainland colleges for higher education, and it is not doing so. The University of Hawaii receives Federal aid and has about 160 pupils enrolled. The annual per capita cost however is \$693.-33.

The isolation of the islands adds greatly to the difficulties of providing vocational education. On the mainland a young man need not confine his choice of an occupation to those of his immediate locality as he can readily move. Going to the mainland for a job means to a man here what going to London to hunt a position would mean to the average Middle Westerner.

This brief sketch of the problem together with the high rating given the schools by the Russel Sage Foundation (23d—Illinois 24th) should give one a high appreciation of the work that has been done by the territorial education authorities. The problem will furnish any student of school administration some excellent intellectual calisthenics. My own task is that of devising ways and means of furnishing education and vocational training to the several thousand American soldiers stationed here, which is no small task in itself.

With kindest personal wishes, I am as ever,

Sincerely yours,  
WILSON H. HENDERSON.

## "PUTTING OVER" MACHINE SHOP EDUCATION IN SMITH-HUGHES CLASSES

FRANK C. VINCENT

Director Vocational Education, City Schools, Bellingham, Washington

**A**NALYZING the educational field for machinists, we recognize three distinct types of schooling: (1) apprenticeship, (2) private trade schools, (3) public schools. Let us consider them in the above order.

Apprenticeship has been evolved thru three steps:

A. Old system, wherein the apprentice received careful supervision of the owner and employer.

B. Later system, wherein the firm became so large that the personal touch of the "boss" was lost. Apprentice must learn from the journeymen. Firm capitalizes on the labor of the apprentice, who becomes a specialist or a poor mechanic.

C. Modern system, wherein the apprentice, in the large corporations, is given special training in vestibule schools or in the shop under special instructors who give attention to the related subjects.

Private trade schools exist only because the apprenticeship system broke down and because the public schools did not rise to the occasion and provide that education which is now recognized as a necessity.

Public school shopwork has been, for the convenience of this discussion, divided into four classes.

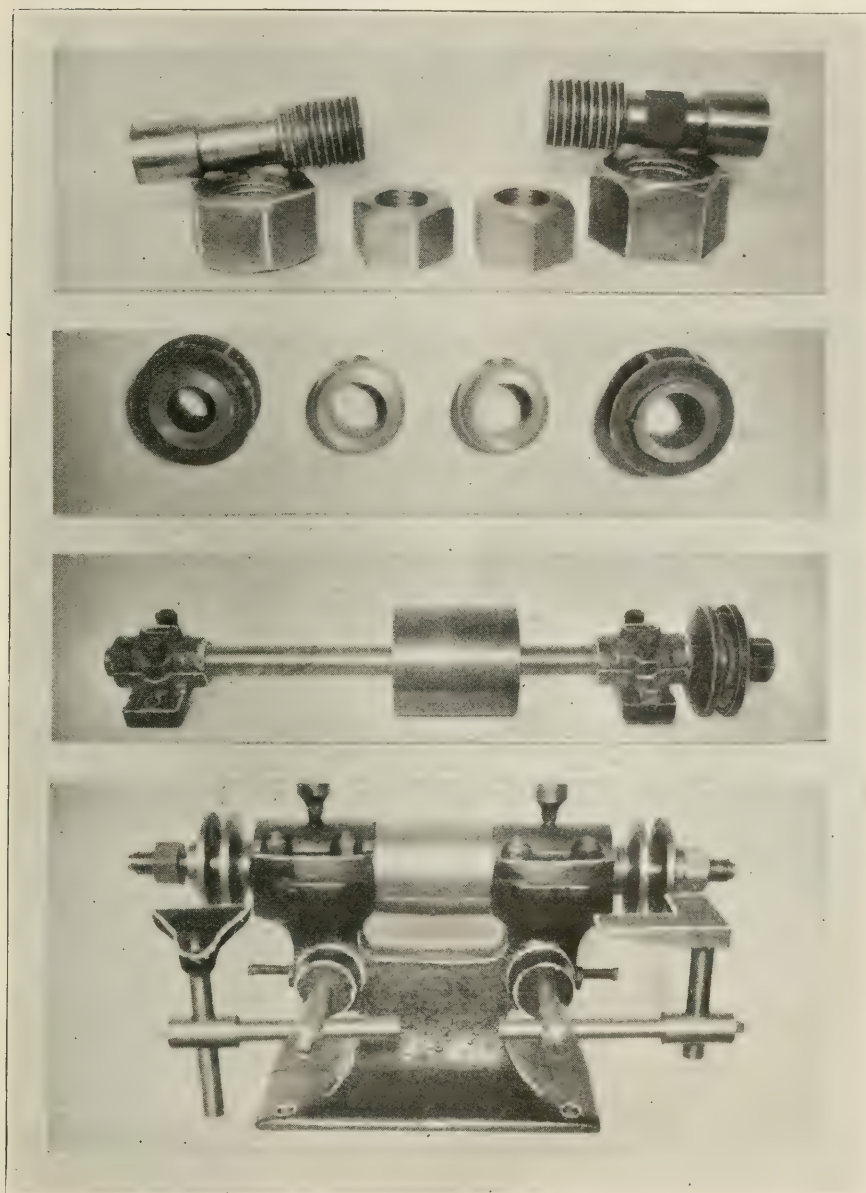
(1) Shopwork on projects not selected for developmental instruction and with no particular aim further than to be making something.

(2) Shopwork on exercises selected for developmental instruction on tool processes and carefully applied in a chronological order. Projects, when finished, have no commercial value or usefulness.

(3) Shopwork on projects which are practical and merchantable, but produced in large quantities, developing specialists in the classroom.

(4) Shopwork on projects which are practical, merchantable, profitable (a minor consideration), "fit for useful employment," providing a balanced course in which each student receives proper training in each unit of the course, and the making of which does not compete with local labor.

It is generally recognized that instruction actually "put over" in the classroom is far superior to the apprentice type of instruction under the first two systems of apprenticeship mentioned above. In contrast with the haphazard instruction received by the apprentice, a tendency in many schools to classify tool processes and teach them in a chronological order has developed courses of study that include many abstract exercises which have no useful or commercial value when completed. On the other hand, many instructors have declared that their work must be practical and have a commercial value. All that has been necessary for them to do was to land an order for a large consignment of goods and begin the organization of a factory. They at once have visions of profits for the school and an exhibition and photographs to show that the students have produced wonderful results. Most boards of education and citizens will be truly and properly impressed with the results attained with boys' labor. If these same citizens were trained to look behind the scenes of such organizations they would find a condition in the schoolroom paralleling that in industry. They would find that those boys who were best fitted



SAMPLES OF MACHINE SHOP WORK DONE BY SMITH-HUGHES STUDENTS IN THE VOCATIONAL DEPARTMENT OF THE WHATCOM HIGH SCHOOL, BELLINGHAM, WASHINGTON



to do certain tasks were kept at those tasks till they had attained a degree of efficiency comparable to that which any man may attain who works at one process for a long period of time. Only the other day an instructor was heard to remark when some new equipment was being admired, "I promised the Board of Education that I could pay for it this year, but as I am falling behind I shall have to turn out the work faster." What he really did was to speed up his specialists. How much better is education in the schoolroom under such conditions than in the commercial shop without its training department? Probably the most pronounced example of this method of instruction is to be found in the classes in automobile repair, wherein any and all makes of cars are brought in for minor repairs. Certain boys become expert valve grinders, others carburetor experts, others brake band renewers, etc. The temptation to put the expert at his specialty when an owner is in a hurry for his car finds itself repeated from day to day.

We are growing to realize that education which does not function is wasted effort. Such education as described is both a travesty and a tragedy. It is a travesty because we have been "kidding ourselves" into thinking it functioned; and it is a tragedy when the boys go into industry and find that the disjunctive training does not get them very far.

Our Smith-Hughes machine shop faced a temptation to give specialized training when local merchants tendered us orders for hardware which would almost induce an instructor to leave the school to start a commercial shop. We appreciated the danger of this temptation, and keeping it in mind, developed our machine shop work to "fit for useful employment," to be practical, to be profitable (a minor consideration), so it does not compete

with local labor, and so it gives us a balanced course of instruction in which each student receives his proper hours of training in every "unit."

We are teaching only a one-year Smith-Hughes course in the high school shop. A two-year course would use the shop six hours a day and it cannot be spared to Smith-Hughes work for that many hours.

The projects made are double-end open wrenches, grinder heads, jack-screws, steel and cast iron set collars, cap screws, screw drivers from broken automobile axles, machinists clamps, large, hexagon, semi-finished nuts, saw arbors with pulleys, etc.

Hearing of the work we were doing, two of the local hardware merchants offered us window space to exhibit it, doing so in a spirit, they declared, of boosting the schools. Once our work was in their stores, they were so impressed with the quality of it that they offered to buy it to put in their stocks. The deals were closed. When the question of price came up we offered to accept the same price that they would have to pay for similar goods, f. o. b. our city. This was agreeable to them.

The actual cost of the supplies going into these goods deducted from the receipts from them netted us a neat profit, for we had no labor costs. In turning over the money to the secretary of the Board of Education a new account was opened up called "Profits of Vocational Department." This fund is drawn upon by the Department to build up its technical library.

This year these merchants called upon us to furnish still more goods. We told them to give us their orders, which they did. We were astounded to receive from one dealer an order for over 6000 pieces. Of course we were unable to accept any such orders, but we were pleased to have them because they gave proof of the con-



SCREWDRIVERS, MACHINISTS' CLAMPS AND JACK-SCREWS,  
MADE BY SMITH-HUGHES STUDENTS,  
BELLINGHAM, WASHINGTON

fidence that our largest firms have in our ability to train boys to produce merchantable goods. These orders were then taken to the machine shop and pruned in accordance with the number of students taking the course, the units of the course of study, and the products of our local shops and factories. We wished to accept only such orders as we were reasonably sure we could fill. We looked the orders over carefully, and eliminated all those items which were being supplied to those merchants from local labor. We analyzed the tool processes necessary to make the articles and estimated the num-

ber of each that would give the desired training in each unit of the course. From this information we itemized orders that would give us the desired results. Giving the dealers a frank explanation of our situation, we asked them if they would be willing to accept the lists as reduced. This they did gladly.

Coordinating the shopwork with the related subjects, taught by men recruited from industry, we have evolved a course which has all the characteristics set up under (4) of public school education as outlined at the beginning of this article.

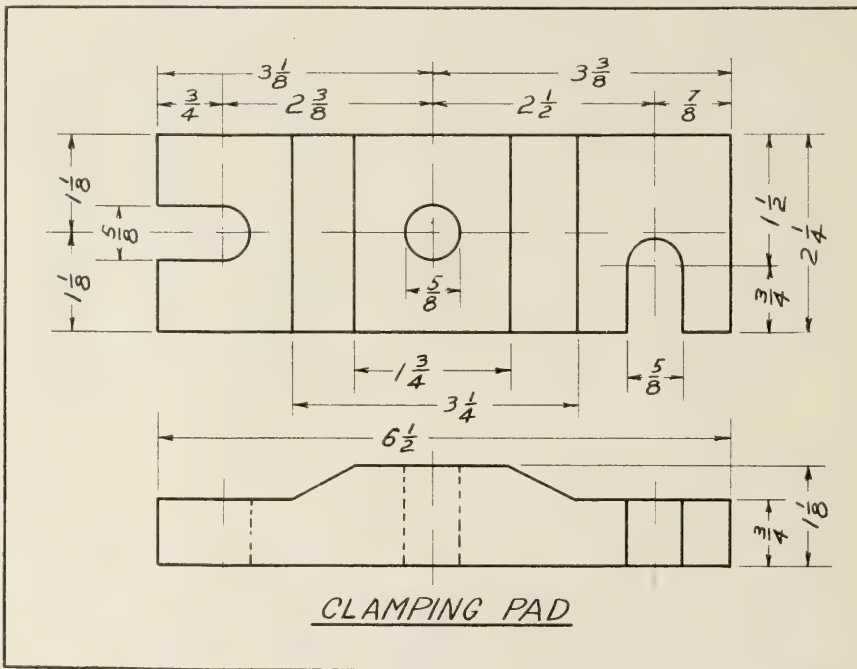


FIG. 1.

## THE USE OF MODELING CLAY IN THE MECHANICAL DRAWING ROOM

W. W. STURTEVANT

Teacher of Mechanical Drawing, South High School, Minneapolis

UNDOUBTEDLY the most desirable result to be achieved in the teaching of mechanical drawing in grade school and high school classes is the developing of

the pupil's power of visualization. A few of the boys from these classes go into the drafting room, a few go into the university, but by far the greater number go



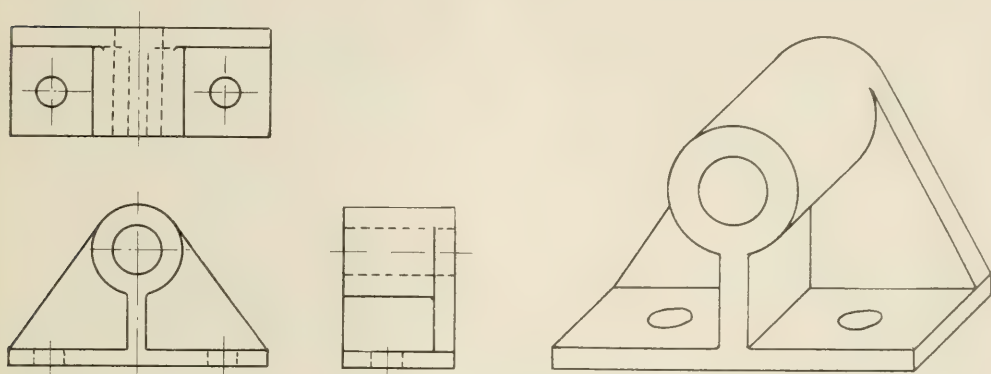


FIG. 2

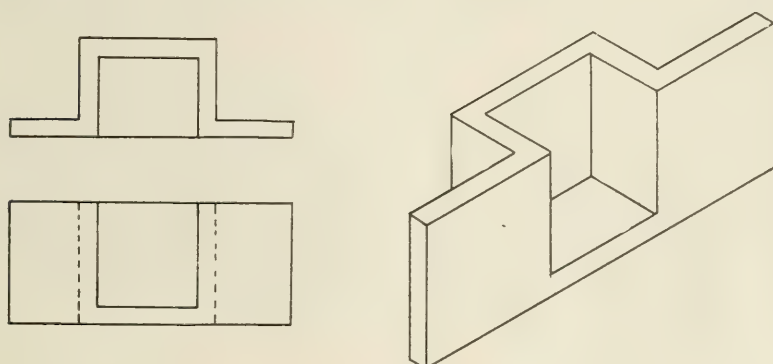


FIG. 3

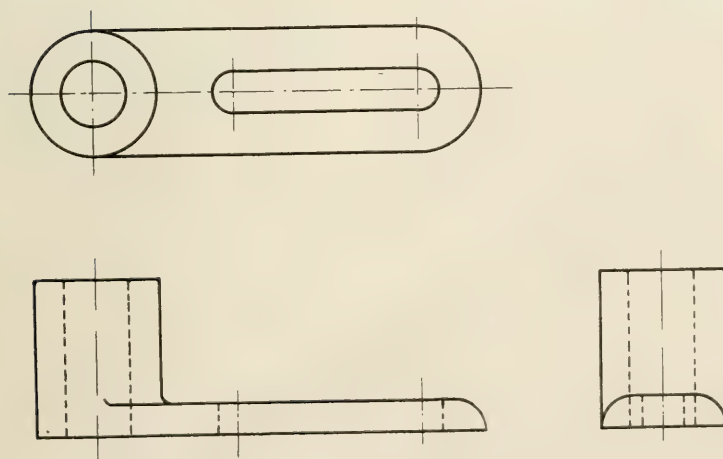


FIG. 4

into business or the trades where the ability to read and understand a drawing is of far greater value than the ability to make a finished drawing. The accuracy and neatness of good technic and much technical knowledge of value to the boy in later life may be taught in the

This method of including a problem in each drawing assigned is good, and has, so far as I can see, only one objection. Boys frequently get the impression that there must always be a third view, whereas if all required information for the making of an object can be given in two views,

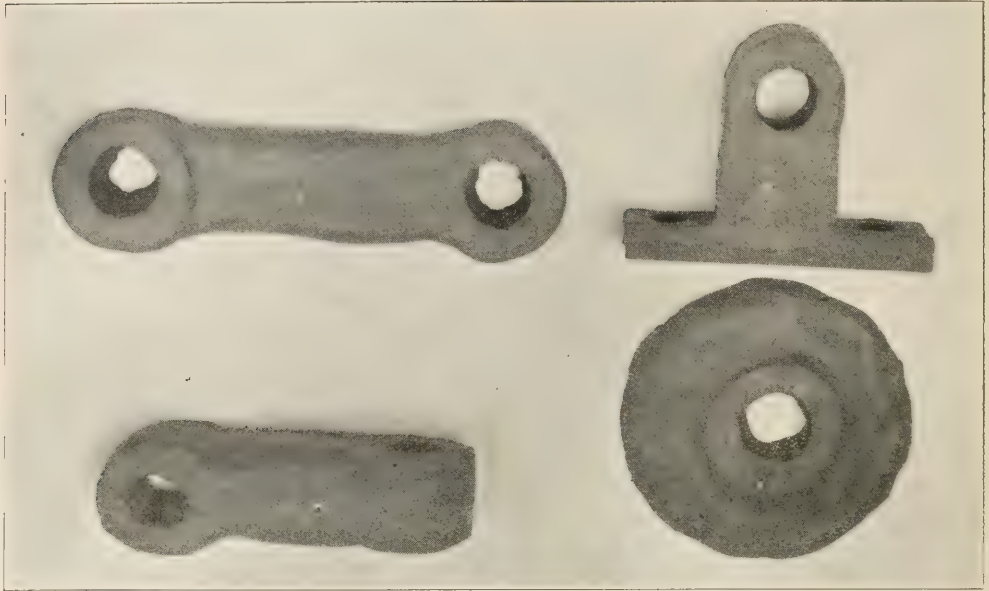


FIG. 5

drawing room, but these are of less importance than the power to read a drawing correctly and quickly.

Just how well a teacher of drawing is strengthening this power to visualize is sometimes difficult to ascertain, and tests of one kind or another must be applied frequently to gage the pupil's progress. Several methods of testing ability to read drawings are in common use among drawing instructors. Of these the one most widely used is the partially complete drawing. The pupil is given an incomplete drawing and, after studying it, he is asked to supply the missing view or to substitute a left end view for the right end view or a section for a side or front view, as might be done, for example, in Fig. 1.

the third view is unnecessary and a waste of time, or if one view shows the object clearly the second view should not be drawn except as a problem for the pupils.

Another good test is to present the pupils with a working drawing, and have him draw the object in perspective, or, in order to save time, in cabinet or isometric projection.

Objections offered to this method are that few boys have the ability to make a good perspective, and that many objects are not clearly shown unless the drawing is shaded. Boys frequently understand a drawing, but are unable to express their idea of the object in a perspective. This method is shown in Fig. 2, 3 and 4. The drawing of a bracket may easily be shown in a cabinet projection. The casting

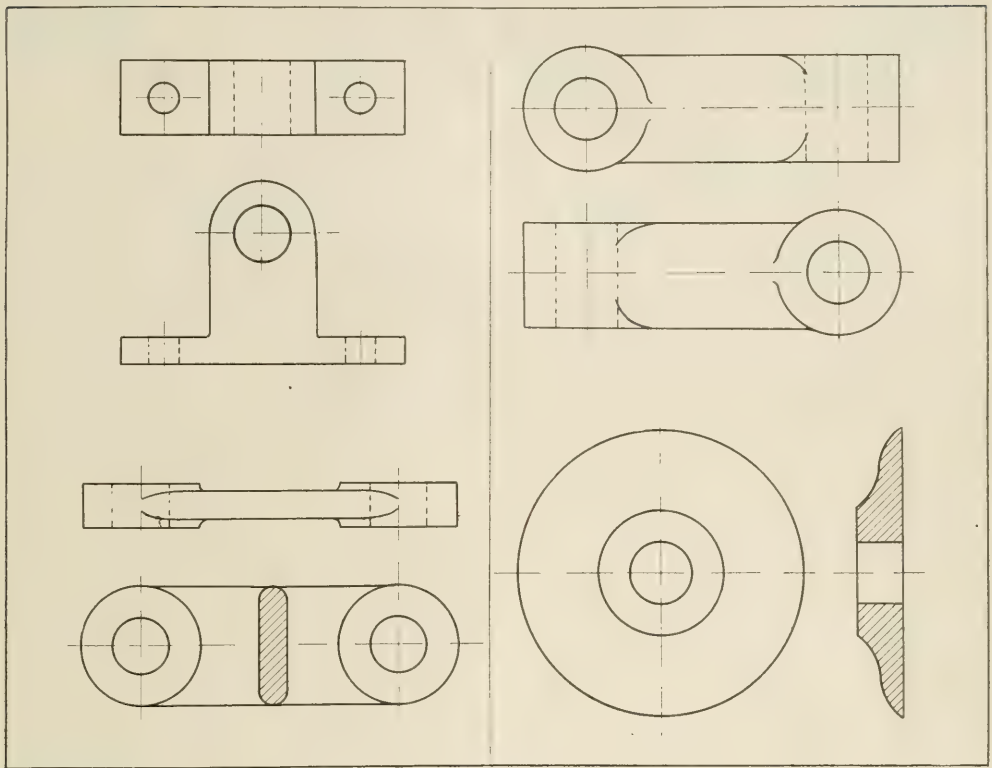


FIG. 6

shown in Fig. 3 may be shown in either a cabinet or isometric drawing while the casting shown in Fig. 4 can not be clearly shown by either of these methods. In such cases, boys may be allowed to go into the shop and work out rough models in wood, but this takes a good deal of time and usually interferes with the shop teacher's program.

The use of clay models, made by the boys, will be found to give excellent results in testing the boy's ability to read drawings. This method never fails to

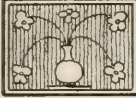
arouse interest. It takes little time, and only ordinary skill to make a miniature clay model of an object, if the boy really can understand the drawing. The only equipment necessary is a few pounds of clay or Plasticine and a few scraps of tin to serve as tools. Fig. 5 shows a number of models made from the drawings in Fig. 6.

Exact proportions are not required and the models are made as quickly as possible with little regard to the finish.

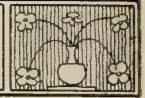
#### SAID OF THE CALIFORNIA REDWOOD TREES!

*"Through all the eventful centuries since Christ's time, and long before that, God has cared for these trees," says John Muir, "saved them from drought, diseases, avalanches, and a thousand storms; but he cannot save them from sawmills and fools; this is left to the American people."*





## EDITORIAL REVIEW FOR THE MONTH



### THE NATIONAL SOCIETY TAKES ITS BEARINGS

ON MY way back from Europe several years ago aboard the steamship *Oceanic* we encountered a fog at night as we were nearing the coast of New England. Without any reason apparent to the ordinary passenger who was comfortably tucked in his berth, the fog horn ceased its periodic warning and the engines of the great boat ceased to move. There was absolute quiet on board, and I suppose many other ears, as well as mine, were reaching out to catch the first significant sound. After a few tense minutes I could discern the sound of another fog horn which seemed to be slowly coming towards us. In my mind I pictured another boat in our path, perhaps ignorant of our presence, and I steeled myself for what might happen next. After perhaps ten minutes, which seemed like thirty, we felt our boat swing a few points in its course; then its fog horn began to sound again, and we moved forward as tho nothing had happened—and nothing unusual had happened, as I learned the next morning. The boat was merely passing Nantucket Light-ship and had stopped to get its bearings.

The experience of the *Oceanic* was not unlike that of the National Society for Vocational Education during the past few years since its great work of promoting legislation for the benefit of vocational education was crowned with success in the passage of the Smith-Hughes Act. At times the big engines have ceased to work with their former show of power and some members have feared disaster, but the recent actions taken by the Executive Committee indicate that the Society is getting its bearings again and

that the coming year will see another purposeful movement forward.

The report of the committee on state and regional societies made at the Atlantic City meeting indicated a decided trend of opinion in favor of a delegate representation plan along the lines of the recent action of the N. E. A. On this account, and by vote of the Executive Committee, the new president, Lewis A. Wilson, has appointed a committee to work out a representation plan for the Society and report it at the next annual convention. The committee is L. H. Dennis of Pennsylvania, chairman; Benj. W. Johnson of Delaware, J. B. Dillard of California, Edith M. Thomas of North Carolina and Clay D. Slinker of Iowa.

Definite action has also been taken on the question of publishing a magazine which has been under discussion for two or three years. After the general approval of the idea by the members of the Society at Atlantic City the Executive Committee has appointed the following committee to make a preliminary survey in order to ascertain the number of subscriptions that may be obtained and to secure data in regard to the cost of the proposed publication: Charles R. Richards, chairman, David Snedden, John Clyde Oswald, Norris A. Brisco, and Lewis A. Wilson.

Another committee consisting of David Snedden, Charles R. Richards and the president will define a plan for closer cooperative relations with other organizations.

While the appointment of these committees is not conclusive evidence on the future course of the Society, it does indicate a definite constructive policy in process of formulation, which is rather cer-

tain to take definite form during the coming twelve months.

#### THE FOREMAN AS A TEACHER

**A** FEW days ago I heard Dr. Thomas F. L. Henderson of the La Salle Extension University, Chicago, tell a group of business men that the present great need in business is morale—the kind of morale that we had all along the line from the American home to the U. S. Army in France when our boys pushed back the Germans in the fall of 1918. He pointed out that the first essential of such morale is interest in the job, and then he turned to the men and said, in substance, Are you interested in your jobs? Have you a goal for your business? Have you a vision that you are following? If you have not, you cannot expect your employes to have, and if they have no vision they have no interest, no morale, no efficiency. Without a vision the people perish.”

As I listened to this I saw the business executive in just about the same relation to his employes as the teacher is to his pupils. He must have a vision, a goal, a purpose, a standard of attainment in order to transmit these to others. Because this is essential the trainer of teachers is being called in to train business executives. A good example of this is the work now being done in Indianapolis by Professor George F. Buxton of Indiana University. Here are his subjects for a course of eight lectures, “The Foreman as a Teacher in the Factory:”

1. The Foreman's Job—the job of getting out the product and the job of handling men.
2. Shop Operations—a study of what the worker must do and of what he must know.
3. What to Teach—laying-out what to teach in starting a new employe in the shop.
4. Teaching Kinks—three ways of getting a worker ready for a new production job.
5. Choice of Methods—different ways of teaching different people shop practice.

6. A Teaching Job—planning a “shop lesson” and getting kinds of results that pay.

7. Developing Skill—how skill is developed, how habits are acquired and ideas fixed.

8. Holding Interest—keeping a live interest in a job in a good factory organization.

What is this but a course for teachers turned end for end in order to meet the mental conditions of the men in the class? Fully half of the work of a foreman is essentially the same as that of the teacher. And with the foreman as with the teacher, “keeping a live interest” is the first great essential. The recognition of this fact on the part of the business men is another long step toward making teaching a profession instead of a job.

It is said of Thomas Edison that he never tries to hold a man who wants to leave in order to get a higher salary elsewhere. His theory is that unless he can make the work he is trying to do fascinating enough to keep a man interested then he deserves to lose him. “Edison feels work is more interesting than money, and that the man who finds work which grips him and engrosses him gets far more out of life than any man whose chief interest is in the amount of money he can make.”

#### ANOTHER OPPORTUNITY FOR THE JUNIOR RED CROSS

**T**HE Junior Department of the American Red Cross, according to newspaper reports, has received an appeal to the school children of the United States to build 5,000 tables and 10,000 chairs to be used in re-equipping schools in the devastated areas of France and Belgium.

The appeal points out that French schools in the devastated area, numbering 5,500 are making very strenuous efforts to resume their important place in the life of France's children but are handicapped by a deplorable shortage of equipment that cannot be purchased in France. An organization in France has been formed whereby children of schools outside the devastated regions have adopted schools in the devastated area for the purpose of providing

equipment. To date, only one-half of the schools in the war zone have been taken care of and the organization has appealed to American school children to assist the less fortunate.

Altho it was pointed out to French officials that

but little of the furniture made in America could be delivered before the latter part of 1921, they replied that the need would be just as acute then as it is today, and that any effort by the American children would be heartily welcomed.

## A POINT OF VIEW

*"But when they come to shape the model,  
Not one could fit the other's noddle."*

—BUTLER.

(A conference on establishing a vocational school for machinists in a high school, at which Johnson from another city has been invited to participate.)

*Johnson.* "The plan I have in mind is briefly that . . ."

*Jones.* May I interrupt to inquire if the school is to be a department of the high school or an independently organized school? I can see advantages on both sides of this important point. It is a very practical question on which we . . ."

*Smith.* "It occurs to me, Jones, that you may be interested in the success of the departmental organization in our high school. Our plan has the approval of . . ."

*Brown.* "Begging pardon, but may I raise the question as to whether the principal speaker has in mind the development of all-round workers or specialists? If the latter is his plan I protest that in the interest of . . ."

*Johnson.* "The plan I have in mind is briefly . . ."

*Huxley.* "Is it not necessary to give a broad background of skill and knowledge in our training scheme to counteract evils of training specialists if we are to obtain the type of workers demanded at the present time. Contrary to general belief there is a need for . . ."

*Anthony.* "This may not be the place to ask if the school which Johnson has in mind is to receive state aid, but in view of the fact that at the last meeting of the state Board of Education it was decided . . ."

*Brown.* "Begging pardon, but I wish to inquire what you mean, Huxley, by specialists. Are you referring to machine hands or to . . ."

*Johnson.* "The plan I have in mind is . . ."

*Huxley.* "I do not believe that we should train men to be less than the machines themselves. This civilization is machine made and is making nothing but automaton, and I, for one, protest against the schools making . . ."

*Prosley.* "In answer to the point that Jones raised a few moments ago, I wish to say that we found the departmental organization failed to deliver the goods and I now advocate that a special school be organized where there can be established a closer coordination of related technical work with the shop activities. The regular teachers do not have even a conception of how to teach related work and it is only the practical . . ."

*Anthony.* "While our city is not as large as Jones's, I found that an independent school did far better work when it was separated from the high school. We were able to run it an hour a day longer, and were not mixed up with the regular high school program. We had related book work that *was* related work, and the boys lost no time on such fancies as music, hall exercises, and gymnasium. Besides there has been no question about the state approval and . . ."



*Huxley.* "But these liberalizing influences are just the thing that trade students need. The work is narrow otherwise, and boys lose their contact with students who are studying for college; and I, for one, stand for that democracy which the cosmopolitan . . . ."

*Smith.* "I agree with Huxley that we ought not to have English and history different for the various groups in our high school. These are liberalizing subjects and must be common for all groups if we are to educate for democracy. To be sure, the mathematics and science should be different for the various groups, and we obtain that by . . . ."

*Johnson.* "The plan I have in mind . . . ."

*Anthony.* "I do not like to interrupt our guest, but how does he expect to receive state aid on the basis of college English and history when it is given to the vocational groups. For my part, I believe it is just such work that drives the boys and girls out of the high school, and we want to keep them there. It is thru shop English and trade history that these boys get . . . ."

*Brown.* "My question has not been answered. You men are ignoring my point. The school is not called upon to train specialists. That job should be left to the shops themselves. What the boys need is an all-round training that will fit them to meet any emergency which may arise after they have left school. We must train them to grow and to advance with the industrialism of the future and not tie them down to present specialized practice. Now when I worked on the job . . . ."

*Jones.* "I do not think I made my point clear when I raised the first question. We are primarily concerned tonight with the organization of the trade work. If it is given in connection with the regular high school we will avoid duplication of

many features of the school plan. One principal can serve for both types of schools. The gymnasium and the high school hall can be used for the vocational groups. If it is a separate school it means an additional amount for overhead expenses. On the other hand it may make the vocational purpose clearer of solution. Now where I formerly taught we . . . ."

*Smith.* "What sense is there in having special English and History for trade boys? To be sure, the vocabulary necessary for the various groups is different, but the principles of writing, construction, and expression are the same. English is English. As for industrial history it seems to me that all history is more or less industrial. Now my own experience has been that . . . ."

*Johnson.* "The plan I have in . . . ."

*Huxley.* "Before considering Johnson's plan, I would like to add a word. I had a boy in my school who thought he wanted to be a machinist, but after working in the shop for a while he decided that he would be a dentist, and now that he is grown up he is a town clerk over in Blinkville. I tell you that a boy of sixteen does not know what he wants to do. Vocational guidance is more important than vocational education. Now when I was a boy . . . ."

*Brown.* "If a boy of sixteen does not know what he wants to do at that age he will never know. Let him get a job and find out for himself. When I was sixteen I made up my mind to be a mechanic and that is what I am, and you fellows know just how well . . . ."

*Smith.* "But you are a teacher now."

*Brown.* "Yes, but I am a *mechanical* teacher (laughter) . . . No, I don't mean that. I am a . . . ."

*Johnson.* "The plan I have . . . ."

*Prosley.* "When a fellow learns a trade, whether he uses it or not, he can

always fall back on it. It is better to have your eggs in two baskets, and if you fall down, one of . . . ."

*Brown.* "Yes, but when you go to fall back you find the trade has moved on, and you haven't anything to lean against. You have been standing still while the trade has gone ahead."

*Smith.* "Well, I tell you that all-around training gives us the principles of the trade, and they never change. A screw-machine cuts threads by the same mechanical principles as the old screw-feed process which I learned on the B & M lathe."

*Huxley.* "But I think, Brown, that your advancement was due to the disciplinary value of those high school studies which were apart from the shopwork. You are not using your shopwork at all, you are drawing on the background furnished by your cultural subjects. You made your first start thru your practical study, but you are now where you are because of your liberal training."

*Johnson.* "The plan I . . . ."

*Anthony.* "I will interrupt only to ask one question of our guest Johnson, and that is, 'Are any of the habits of work, of accuracy, of neatness, of attention transferable from your shopwork training, and can they be made applicable to your present job?'"

*Prosley.* "I think I can answer that question by quoting Thorndike who discredits to a large measure the theory that manual training accuracy as expressed by well-made joints is transferable to accuracy in adding up a column of figures. You are neat, Anthony, around your shop as regards tools and materials but I have seen your bed-room dresser and by the appearance of the neckties I judge that . . . ."

*Brown.* "You fellows all dodge my question. I thought that all the present

industrial unrest is due to the fact that workers do not know that part they are playing in the industrial game. They feel that the cards are stacked. Helen Marot tells in her book how . . . ."

*Johnson.* "The plan . . . ."

*Jones.* "I am not so sure but it would be advisable to establish part-time instruction on the cooperative basis in order that the expense of equipment and trade training may be thrown upon the production end of vocational training, and leaving to the school only the expense, relatively small, of conducting the related work. I trust that Johnson will point out in his plan that there is an element of practical training which can be attained best thru . . . ."

*Brown.* "So you would expect that boys would learn anything in the modern shop under the stress of mere production. Why! I tell you that the foreman is only interested in getting work done. He does not care anything . . . ."

*Huxley.* "It is the old story which you fellows do not seem to get into your heads. These boys are too young to be divorced from the school influence. Four hours, or even eight hours a week are not enough for the cultural contact. The only advantage of this part-time idea, to my mind, is that the boys will see the advantage of coming to school for full time and getting a high school diploma. They need back-ground I tell you and not for one moment will I . . . ."

*Prosley.* "Fiddlesticks! These part-timers are the working type of boys. They do not like school and they quit for a job and it is our business to help them on that job and to up-grade them. You do not get anywhere with your cosmopolitan ideas, Huxley. You get a lot of clean-collared . . . ."

*Johnson.* "The . . . ."

*Anthony.* "I came here tonight to find out how to establish a vocational

school for machinists and how to get state aid for it. I want to hear from Johnson. I imagine, of course, that he has three plans. First, the unit trade idea, second the department idea, third the part-time idea. In the first instance, he probably follows the plan of New York State. In the second he proposes a sort of a school within a school (only I do not see how he is going to organize his English and History work.) In the third he will establish connections with several of the machine shops in town and will use the blue prints, computations, and scientific principles as applied to the machines

and processes. At this point I wish to ask him . . . ."

*Johnson.* "Begging pardon, but the hour is late. I was invited to come over to the town to present my plan. You men have done the talking. I thank you for your kind attention and for the points which have been made contributory to a most interesting discussion. I can only add that I have further evidence that it is not necessary to hear a paper in order to discuss it intelligently. I must leave now in order to make the 9:27 train. I thank you."

—ARTHUR DEAN.

## WASHINGTON CORRESPONDENCE

### SPECIAL CONFERENCE ON SUPERVISION

A FEW weeks ago the officers of the Eastern Arts Association requested the Commissioner to call a special Bureau of Education conference in connection with the Baltimore convention, similar to the conferences which have been held annually since 1914 in connection with the meetings of the National Society for Vocational Education, and for the past two years in connection with the meetings of the Vocational Education Association of the Middle West. In accepting this invitation Dr. Claxton agreed with me that this would afford an opportunity to give some prominence to a field and its workers which have been somewhat neglected during the past few years.

There has been a tendency in certain quarters to magnify the value of some lines of school work by suggesting the relative unimportance of others. The notion has gained some currency that manual training is all right in its place but that the man who is engaged in vocational education is doing the real job!

It is not necessary at present to assign precise relative values, but I believe that with thoughtful educators the conviction is growing that if we cannot have both, to dispense with vocational education in the public schools would be less of a calamity than to abandon our efforts to develop an effective program of manual arts in those years preceding the point at which vocational education may properly begin.

### HELPING THE SHOP TEACHER THRU SUPERVISION

IT WAS decided, therefore, to call a special conference on supervision, and to limit the field of discussion to "shop-work and drafting in which the objectives are primarily the general educational values, and secondarily the prevocational values," in distinction from the trade instruction field. The general topic announced was "Helping the shop teacher thru supervision;" that aim was to develop a few specific suggestions as to the cooperative relationship which should exist between the supervisor and the



teacher on the job; and the meeting was planned primarily for shop teachers and supervisors.

The response, both in attendance and in contributions to the program, was splendid, altho I had only a short time in which to make the arrangements. The attendance was 41, representing seven states and the District of Columbia. Among this number were ten teachers of shopwork or drawing or both; 18 supervisors and assistant supervisors; three principals of schools; and four superintendents and assistant superintendents of city schools. A better and more representative group for the purpose could scarcely have been hand-picked.

For the program I planned four addresses: (1) A general presentation of the elements of helpful supervision; (2) A successful supervisor was asked to imagine himself a teacher once more, and to discuss "What I should like to have the supervisor do for me if I were a shop teacher;" (3) A skillful shop teacher was asked to assume that he is about to be assigned to a supervisory position, and to discuss "What I should like to do for my shop teachers if I were a supervisor;" (4) A city superintendent of schools was asked to outline briefly "What I expect of my manual training supervisor."

The four addresses were given by Dr. E. B. Kent, director of manual and industrial training, Jersey City, N. J., Edward A. Reuther, State Department of Education, Trenton, N. J., J. N. Baker, instructor in machine-shop, Germantown High School, Philadelphia, and Fred S. Shepherd, superintendent of public schools, Passaic, N. J., respectively. It was an unusually strong program, and the speakers supplemented each other remarkably well. The discussion which followed was animated and purposeful, and was ably summarized at its close by Frank M. Leavitt, associate superin-

tendent of public schools, Pittsburgh, Pa.

As a result of this conference I have secured a quantity of material on this vital topic of supervision, which I expect to work up into a brief report that I am sure will be helpful to supervisors and teachers. Unfortunately, the Bureau's funds for printing for the current fiscal year have been exhausted, so that the report cannot appear until some time in the fall.

#### THE BALTIMORE CONVENTION

THE Eastern Arts Association held a successful convention in Baltimore, March 24-26, as guests of the Maryland Institute, the Municipal Art Society, the public schools, and other educational institutions of the city. I was not able to remain thru the entire convention, but it seemed to me that the program included an unusually large proportion of papers and addresses of a definitely and practically helpful character, as distinguished from theory and oratory. There was much earnest discussion of ways and means to improve the quality of the instruction we give and to improve the efficiency of our work generally.

I understand there were about 375 out-of-town members in attendance. Four general sessions were held; and eight section meetings, as follows: Fine Arts (2), Household Arts (2), Elementary Industrial Arts, Secondary Industrial Arts, Vocational Education, Part-Time Education. There was no formal banquet, but several luncheons and dinners were arranged, and these proved to be an important feature of the meeting.

#### ADDRESS BY DR. SNEDDEN

To me the most interesting address of the sessions I attended was that by Dr. David Snedden, of Teachers College, New York, on "Industrial education thru elementary industrial arts," in which he

suggested a basis for evaluating our work. In the progress of the child from infancy to maturity, he said, we may distinguish two main lines of activity: (a) Activities having to do with *growth, development*, which have their chief justification in their influence on the individual at the moment: such as, assimilation of food, play, responses to fresh air, light, sunshine, etc.; and (b) Activities which we may call *training*, which look rather to the future, and which function primarily by preparing the individual for what is to be.

Corresponding to these two lines of activity, therefore, we may have: (a) *Developmental aims* in education, served by free play, stories, music heard, manual work of the crude manipulative expression type, and the like; and (b) *Projective aims* in education, in the furtherance of which we introduce handwriting, spelling, silent reading, number work, and so on.

Roughly speaking, we may say that *nature* demands the activities classified under (a), while *civilization* calls for the things done under (b).

#### A CRITERION OF MANUAL TRAINING

IN THIS analysis, the aims which we formulate for our work under (a) have validity if the activities actually contribute to the growth and development of the individual at the time. On the other hand, the aims set up under (b) have importance and validity only in so far as the activities engaged in look forward and function in adult life.

If this reasoning is sound, said Dr. Snedden, the application of this point of view takes our elementary manual training entirely out of (b), and places it in (a), and the activities are valuable and justifiable primarily for their contribution to the growth and development of boys and girls at the various stages.

Dr. Snedden made a distinction between the educational needs of the boy or girl in the typical urban community, with its paved streets, keep-off-the-grass signs, and generally restricted opportunities for child activities, and those of the child brought up in the country or village, who has a more varied environment, and more natural opportunities calling for participation in constructive, developmental, manipulative experiences and activities. This discussion was limited entirely to the urban field.

After all, he said, the place where we are going to work out the real objectives of manual training in the 12-to-15-years-of-age period will be in schools where we can have a reasonable time allowance (say, two hours daily), specially trained teachers, and special equipment.

#### THE DETERMINING AIMS

DR. SNEDDEN outlined what he called an *optimum range* of practical activities which might be available in the school shops and laboratories under the most favorable conditions, including printing, bookbinding, weaving, gardening, carpentry, electricity, cement, photography, and the like. Under usual public school conditions it is possible, at present, to do no more than offer a very limited choice from among these lines of work.

For purposes of discussion he suggested the following as the determining aims, with the tentative weights assigned on the basis of 100 points:

- (1) The one big purpose which should actuate all our work is to realize the *developmental* values of the activities in which the boys and girls engage; the new experiences and especially the manipulative activities should be engaged in in the spirit of the amateur, in the best sense. (75 points).
- (2) Activities for *appreciation*. (15 points).
- (3) Activities for *guidance*. (8 points).
- (4) Activities given from the point of view of the *handy man* about the house. (2 points).

MANY VALUABLE PAPERS AND ADDRESSES

THERE were many other valuable addresses given, and I have enough material in my notes to use up three times the amount of space available.

At the business session on Saturday morning the following officers were elected:

President, Fred P. Reagle, assistant superintendent of public schools, Montclair, N. J.; vice-president, Miss Frances H. Bacheler, public high school, Hartford, Conn.; secretary, M. W. Haynes, principal, Vocational School, Bayonne, N. J.; treasurer, A. H. Wentworth, 169 Church Street, New Haven, Conn.

Rochester, N. Y., was chosen as the place of meeting for 1922.

## IN FOREIGN COUNTRIES

### THE EDUCATIONAL CRISIS IN ENGLAND

THE tremendous expansion of the British educational budget, due to the progressive program of education adopted by the Government and to the increase in teachers' salaries to meet present living conditions, has brought about what is being termed an educational crisis in Great Britain. Sir Michael Sadler, vice-chancellor of Leeds University, has recently pointed out that the present is the third great educational crisis in the history of England. He said the first was after the battle of Waterloo and the second in the years just following 1870. He called attention to the fact that in both of these crises "in spite of an instinct that more education was needed, the people took the narrow view of what education meant and were neither bold enough nor self-denying enough in their expenditure, nor willing enough to forego their timid fears about the possible results of widening educational opportunity." He believed that "all who looked upon the matter in a dispassionate way would agree that England would have been a better England, and Europe a better Europe, and that possibly there would have been no European war, if they had been bolder and more unselfish in expenditure upon education."

### PROTESTS AGAINST FALSE ECONOMY

THE fight for education," as it is called by *The Schoolmaster*, be-

came especially active when it was proposed in certain quarters, and not rejected by the Government, that the application of the Education Act of 1918, and particularly those sections of the Act referring to continuation schools, be indefinitely postponed.

It was not merely the teacher who entered the fight. A group of about twenty influential employers sent in a strong protest and stated that if the Government had decided to postpone the application of the Education Act, they begged to have such action reconsidered:

We recognize, of course, that there is urgent need for economy, both public and private, at the present time. But economy consists in wise expenditure, not in unintelligent parsimony; and educational parsimony appears to us a peculiarly short-sighted form of extravagance.

The addition to our annual expenditure involved in providing continued education for young persons from fourteen to sixteen is small; some years must, in any case, elapse, we understand, before it reaches even so low a figure as £8,000,000. But it is not merely by a consideration of the cost to be incurred, small as it is, that the proposal to starve public education must be judged. Nothing but loss can result from neglecting to develop the productive powers of the nation, and of those powers incomparably the most important are the skill and intelligence of its workers. As business men and employers of labor, we are convinced that no expenditure can be economically more beneficial than an increased outlay upon education, and no policy more disastrous to industry than one by which that outlay is reduced.

Early in February the fight was temporarily centered in Birmingham when the Council, by a majority vote of two



to one, decided to close the day continuation schools of that city. The reason given was "the present financial stringency." The Birmingham *Evening Dispatch* opposed the action of the Council:

We live in times when public economy is imperative. It is a legacy left by the war. Only by producing more and spending less can the nation hope to regain something like its normal life. But there are wise economies and foolish ones, and the worst of all are panic economies. Having spent a considerable sum of money in establishing a system of day continuation schools, the Birmingham City Council has decided to cut its loss and suspend operations. . . . Those who take the short view will approve, but the children will suffer. Education is an investment which brings in a return for the money expended by increasing national efficiency. One of the greatest needs of to-day is an intelligent democracy, which means an educated democracy. It is the workers' children who are going to suffer in Birmingham.

One of the results of the Council's action was a letter of criticism from the Minister of Education, Mr. Fisher. He especially criticised the action in closing the three schools already in operation, one of which had been organized on the basis of voluntary attendance.

Mr. Fisher was willing to consider temporarily restricting attendance to pupils between the ages of 14 and 15 years, which he understood had not been suggested as a solution of the problem by the Birmingham Council, and he expressed the hope that they would reconsider their action, making proposals for curtailment of the scheme instead of abandoning it entirely. Up to date we have seen no report of such action.

Another typical protest was a resolution passed unanimously at the convention of the Association of Technical Institutions held in London on March 4th and 5th. This Association recorded its conviction that the need for "education of all grades is such that any reduction in expenditure which curtails educational opportunities would constitute a national

menace." The Association urged the Government "to press forward without delay to the provision of an adequate and complete system of national education."

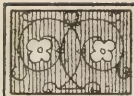
A lighter touch in the controversy, but perhaps not less effective, was given by Mrs. H. A. L. Fisher, wife of the Minister of Education, who, in giving a lecture on "The Children's Era and the Citizens of the Future," is reported by *The School-master* in part, as follows:

The people who don't really like education are dressed up as economists nowadays—(hear, hear)—and they are having the time of their lives. (Laughter.) It is our business to see that the reactionaries don't have too much of their own way." (Hear, hear.) People should understand what education really meant. There were not enough enthusiasts for it. Some people thought it was the teaching of some particular political creed. Every child in the country should be given the very best chances to develop its faculties in the best possible way, and there should be a much bigger wave of public opinion in favor of real education for all children than there was at the present time. Then they could laugh at the economists. . . . Of all forms of waste, there was nothing so cruel as waste of child life. Let them see that such waste was stopped and not the other kind. (Hear, hear.)

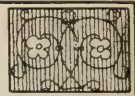
#### MANUAL TRAINING PROGRESS IN ENGLAND

**I**VOR JOHN, president of the National Association of Manual Training Teachers in England is reported to have said at a recent meeting of a branch association at Cardiff, that the past year has been the most important in the history of that Association.

The ideals which the Association had long been struggling for had at last received official approval. Handwork and practical subjects were now compulsory under the terms of the new Act, and the decisions of the Burnham committee on salaries had at one and the same time given the handwork teachers the recognition so long withheld, and handwork in education an important part to play in the schools. That large proportion of young people whose interests could not be held by the traditional "bookish" system would find that, in the hands of efficient teachers, handicrafts and practical subjects could be made the royal road to learning.



## PROJECTS, PROBLEMS AND NOTES

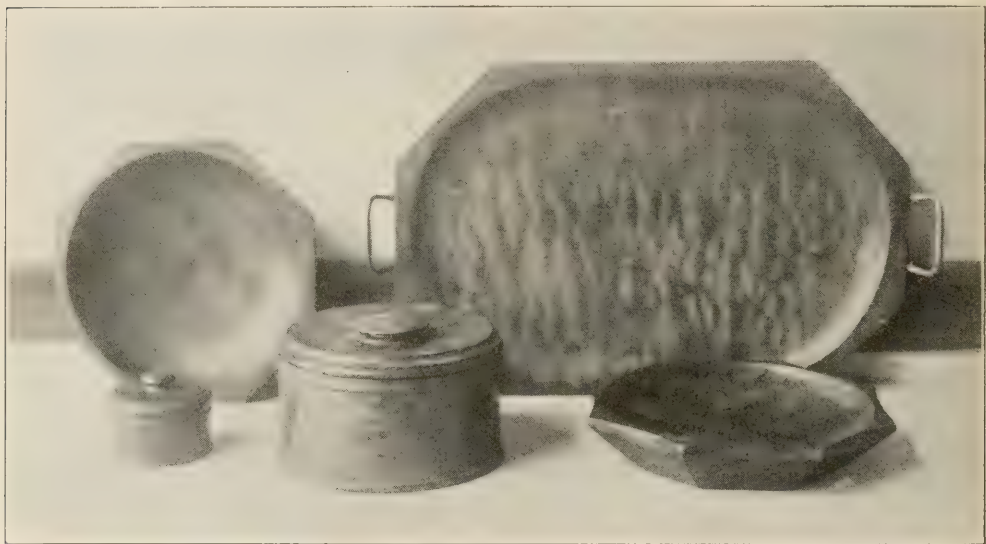


### HELPING STUDENTS TO CHECK THEIR LUMBER BILLS

THE following letter came to hand some time after its writer had received a copy of *Densmore's Handy Lumber Table*, a convenient sheet that is being distributed free of charge by the Manual Arts Press to teachers of woodworking:

rect charge account. When we have pronounced the article finished he is required to figure up his bill. Now here was a place that required a great deal of the instructors time in checking and helping with this work.

As soon as I got your table I framed it and hung it near the pigeon holes, and I have been pleased



SOME BEAUTIFUL PIECES OF WOODWORK MADE BY S. L. CALDWELL, TEACHER OF MANUAL TRAINING HIGH SCHOOL, BIXBY, OKLAHOMA

Dear Sirs:

I desire to thank you for the lumber table sent our department. It works right into our system.

The department here is not large enough to have a special care-taker of the lumber room, so we have little pigeon holes just outside of the door for each class. In front of these is always to be found a pad of lumber bills. When a boy starts a project, or rather when he reaches the woodworking stage of the project, he enters the lumber room, selects what he thinks is the lumber he wants, and after approval gets out the parts he thinks he can work on at once. He then makes a bill, heading it with the name of the article, and the lumber he has taken out, in standard dimensions, places it in the pigeon hole for his class. When he wants more lumber or other materials he enters these on the same bill, so that when the article is finished he has a complete bill made out, and the department also has a cor-

with the way in which the boys understand it. Just explain it to one of them and in no time at all the whole class is figuring out bills correctly, and enjoying it.

So I thank you very much for your kindness in sending it.

Yours truly,  
ORVILLE J. GRISIER,  
Supervisor of Manual Arts,  
Rocky Ford, Colo.

### A GOOD PRINTING PROJECT

THE faculty of Robidoux Polytechnic High School felt that if a Good English drive of one week is a good thing, then a campaign of a half semester certainly would be worth while. Accordingly, the English department selected a number of most common errors in speech, and prepared to combat them in a systematic way. The

**Mr. Good Speech** says:

This morning, as with Goodman Brown  
 I crossed the village green,  
 I saw, tied to the whipping post,  
 A man who said, I seen.

Say, "Where is this?" and  
 "Where is that?"  
 "Where's my coat?" and  
 "Where's my hat?"  
 But never say  
 "Where is it at?"

"I did it;  
 I did it;  
 It was no fun.  
 I was glad,  
 Oh, so glad!"  
 When it was done

**Get is spelled with an  
 E and Just with a U**

Mr. Good Speech

**W**HERE is the sloppy speaker  
 who says, "I gotta go,"  
 and "I hadda say it?"  
 Surely, not in Robidoux

$$-2a \times -4b = +8ab$$

*Two Negatives equal One Positive*

I didn't do nothing = I did it

applied art and printing departments were asked to co-operate.

Each week, the art students placed a large poster in the main hall, attacking an example of bad English. At the same time, the printing students designed and printed small placards with the same message, and these were placed in conspicuous places in each room. Thruout the week, special attention was given to this error by all the teachers.

The work of the Printing students, reproduced

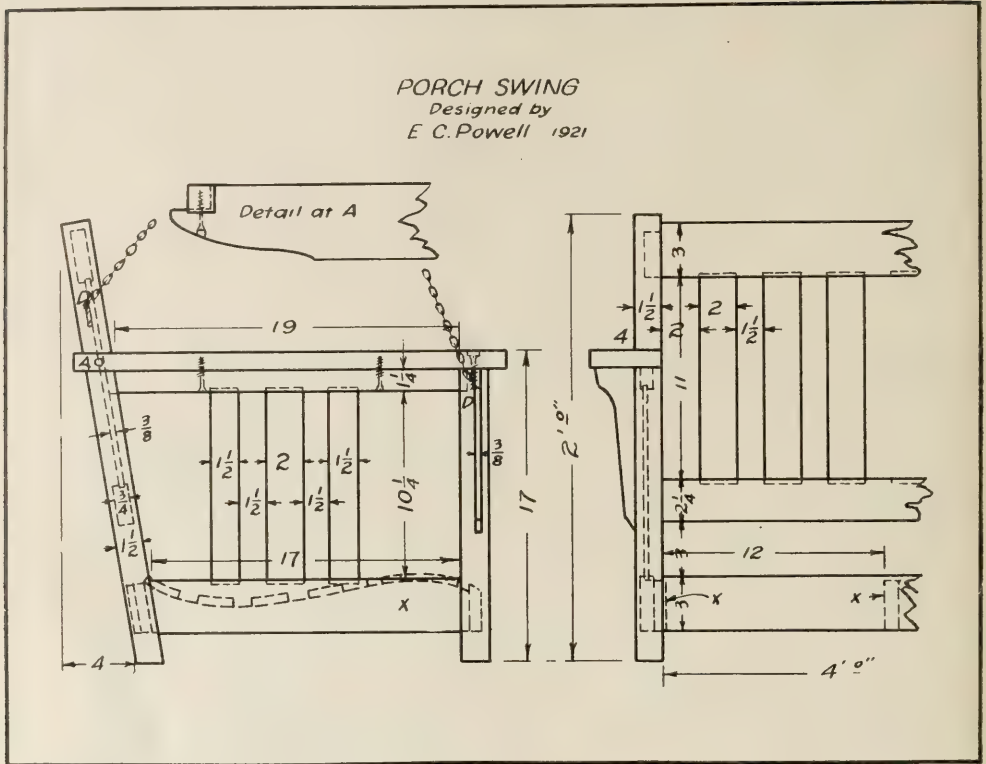
herewith, is a splendid example of correlation between shop and academic classroom.

—RALPH W. POLK,  
 St. Joseph, Mo.

### PORCH SWING

**T**HIS swing has proven satisfactory when honest construction, comfort and good design are sought. The curved seat is the most important feature, which, with the sloping back, provides





greatest comfort—the primary thing to be considered when building a porch swing.

The curve is obtained by band-sawing  $\frac{3}{4}$ " sills, (marked X) which fasten to the front and back rails of the seat, to which the seat slats are nailed with  $1\frac{1}{2}$ " finishing nails. A sill should be attached to the inside of each end section, and the others should be evenly spaced, 12" to 24" apart, the distances varying with the strength of the sill and the length of the swing. I use four sills in a 4'0" swing, one at each end and two spaced between. When only one sill spans the middle space the slats will spring loose when one person sits near one end. A sill should be directly under each occupant.

The entire ends can be built independently and then assembled. The arm should be the last part of the end assembly. Put it on as shown in the end detail at A. The front end of the arm can be fastened directly into the front post with a screw or dowel, or both. The arm brace can be shaped to suit the builder.

Mortise-and-tenon joints are used everywhere except back and end slats, which are housed in.

Chains can be attached by bolts at D D or by hooks made in the forge shop and fastened on with

wood screws. If the chain is brought down to the front post thru a hole in the arm, it will strengthen the ends, and help take up endwise strains.

Let no one hesitate in putting this much work on a porch swing, since, after all a thing of beauty, and comfort, and honest workmanship, is a joy forever.

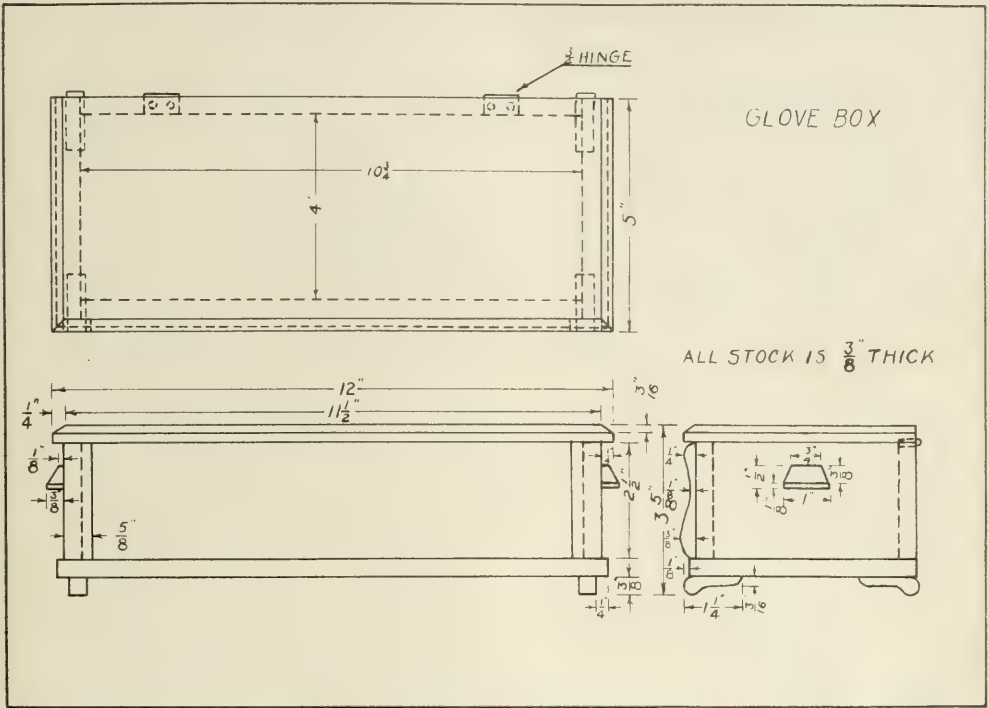
—E. C. POWELL,  
Massillon, Ohio.

### GLOVE BOX

**G**LOVE boxes are made of many sizes and descriptions, some in very attractive design. They make very useful gifts. Here is one that is a little out of the ordinary, and it can be made in the manual training shop. It is a miniature cedar chest as far as design is concerned.

The boxes made by the writer were of red cedar and finished in a natural finish, two coats of white shellac and one coat of varnish being used. Each coat of shellac was rubbed down with fine sandpaper and oil, and the coat of varnish was rubbed with pumice and oil.

The finished product gives the effect of a cedar chest and it is a favorite problem among boys who



C.A. Rosell

are not far enough advanced in manual training to make a large cedar chest.

—C. A. ROSELL, Woodhull, Illinois.

### PROBLEMS IN FORGING

**T**HE forging problems shown this month are a part of the series being contributed by Griffith E. Owen, of Grand Rapids, Mich.

#### HARDIE

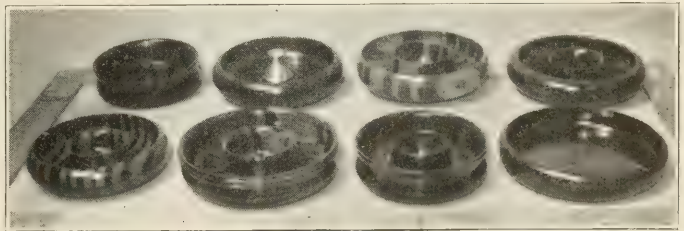
1. Use short bar tool steel  $1\frac{3}{4}$ " square.
2. Draw out shank.
3. Cut off bar.
4. Draw large end to shape.
5. Cut off extra stock.
6. Harden and temper cutting edge.
7. Grind cutting edge.

#### SET HAMMER

1. Use short bar  $1\frac{1}{2}$ " square tool steel.
2. Punch hole.
3. Draw out head.
4. Trim head.
5. Use drift pin and finish hole to size.
6. Cut off from bar.
7. Square face.

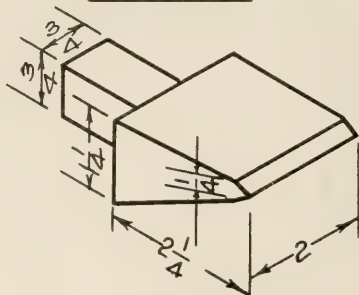
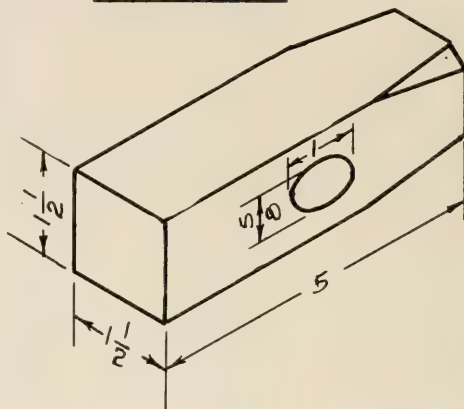
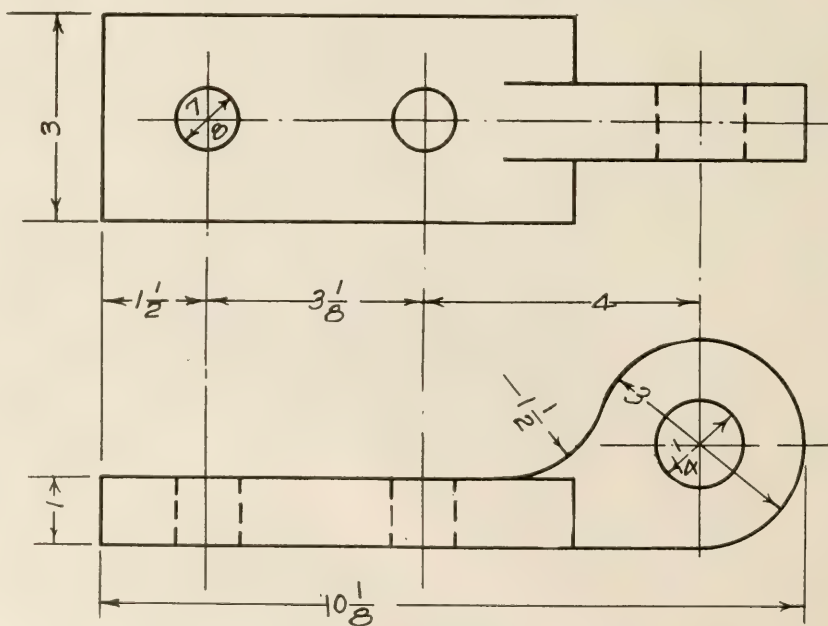
### SAFETY CHAIN CLEAT

1. Cut stock.
2. Draw out eye under trip hammer.
3. Draw out flat part (shank).
4. Round edge of eye and punch hole.
5. Finish flat part and cut to length.
6. Drill holes.



NUT BOWLS FOR CHRISTMAS. MADE IN THE HIGH SCHOOL, BELLINGHAM, WASHINGTON

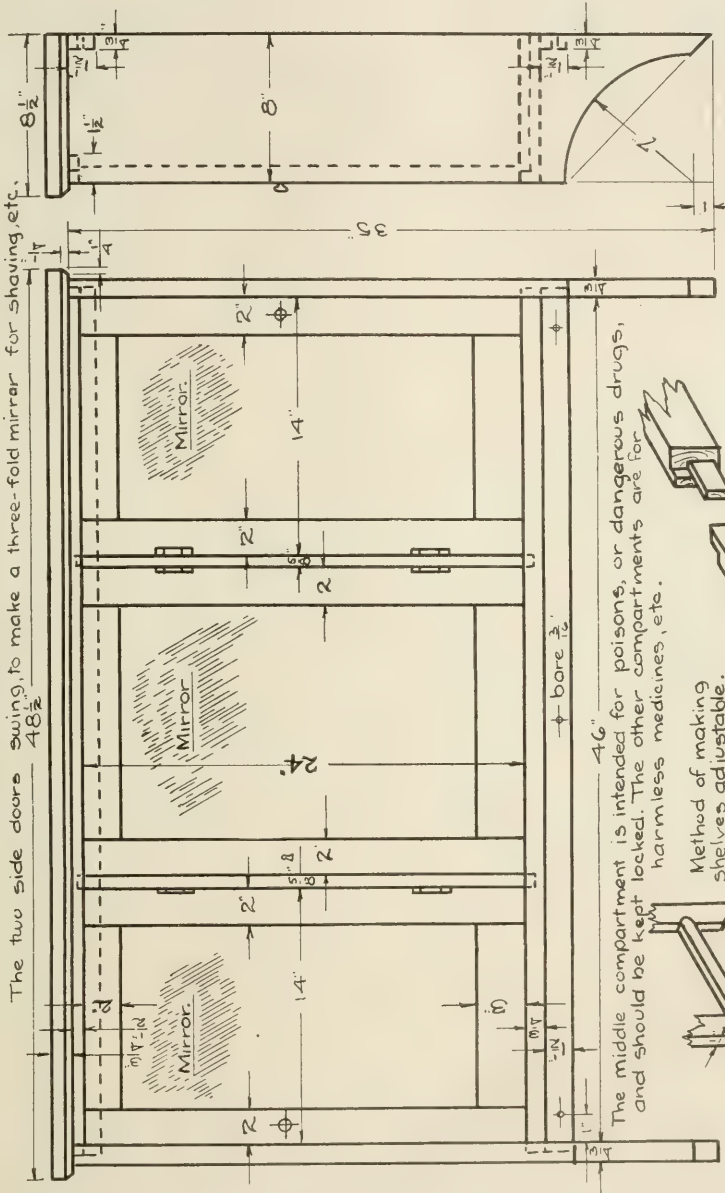
**T**HE bath room cabinet shown on page 375 was designed by Harold R. Wise, instructor in manual training in Boston. It is one of a series of well-considered problems worked out by Mr. Wise.

HARDIESET  
HAMMERSAFTY CHAIN CLEAT



BATH ROOM CABINET.

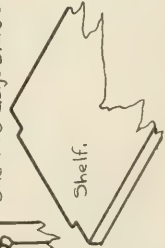
The two side doors swing, to make a three-fold mirror for shaving, etc.



The middle compartment is intended for poisons, or dangerous drugs, and should be kept locked. The other compartments are for my harmless medicines, etc.

Method of making shelves adjustable.

Joint for doors.  
Mortise and Tenon



## CURRENT PUBLICATIONS

*Commercial Engraving and Printing.* By Charles W. Hackleman. Published by the Commercial Engraving Publishing Co., Indianapolis, 1921. Size, 6x9 in.; 846 pages; 2004 illustrations; price, \$15.00.

This is a manual of practical instruction and a convenient book of reference covering commercial illustrating and printing by all the processes in common use. It is almost a cyclopedia of information of these subjects. It is intended for teachers, students, salesmen, advertising managers, printers, engravers, lithographers, photographers, commercial artists and all others who wish to know the main facts concerning the making of engravings and the processes of printing from them. While it treats of technical subjects, the book is written in as non-technical language as the subject will permit, and is, therefore, intelligible to any layman or student. It is very fully illustrated.

Under the heading "Copy and its Preparation" the book discusses commercial photography, proportions, art room accessories, retouching, grouping of photographs, wash drawings, line drawings and methods of treatment. Under "Relief Processes of Engraving and Printing" are treated line etching, line color plates, halftones, halftone color plates, combination plates, duplicate plates, wood engraving, wax engraving, chalk plates, methods of mounting plates, letterpress printing and general photo-engraving information.

Later in the book such subjects as the following are given space: lithography and offset printing, photo gelatin process, copper plate engraving and printing, steel plate and die engraving and printing, photogravure, rotary photogravure, printing inks and the harmony of colors, embossing, stamping and cutting dies, music engraving and printing and many more subjects in the same general field.

This book will doubtless find an important place in the working libraries of schools that are teaching printing, photography, any form of engraving, or courses in commercial art.

*Employee Training.* By John Van Liew Morris. McGraw-Hill Book Co., New York, 1921. Size, 5½x8; 311 pages.

This is a study of Education and Training Departments in various large industrial plants. In making the study the author visited 33 different plants to study the educational work first-hand and in many cases re-visited them after a first draft of his book had been made in order to eliminate errors.

The titles of the five sections of the book suggest the author's treatment of the subject: I. Comprehensive programs for apprenticeship and special training. II. Programs emphasizing apprentice-

ship. III. Programs emphasizing special training. IV. Programs of primarily technical instruction. The fifth section discusses in more general terms (a) apprentice training (b) training of technical men in the industry, (c) special training, (d) technical and general instruction for employee improvement, and ends with the author's conclusions.

This book gives a great amount of data that will be of practical use to students of industrial education.

*Toy Patterns.* By Michael C. Dank, Instructor in Manual Training, Brooklyn, N. Y. The Manual Arts Press, Peoria, Ill., 1920. Twelve plates, 14x10½ in., in portfolio; price, 80 cents.

This collection of full-size working drawings of toys meets a demand for designs that are at once practical and artistic. The author is an excellent draftsman—freehand as well as mechanical; he has a feeling for beauty in design; and his practical experience in teaching toy-making to large classes of boys has taught him what is most interesting to the boys of the grammar school period. In this way, too, he has learned what kinds of toys are within the range of their ability. He has classified them as (a) jointed animals, (b) animal rocker toys, (c) wheeled platform toys, (d) lever toys, (e) string toys, (f) freak toys, and (g) novelties. Many of them are made of thin wood with the coping saw as the principal cutting tool.

### RECEIVED

*Utilization of Black Walnut.* By Warren D. Brush. Bulletin No. 909. Issued by U. S. Department of Agriculture.

This is a valuable professional paper and is well illustrated. It covers 89 pages. Price 30 cents per copy.

*In the Open.* The National Forests of Washington. Forestry Service Departmental Circular No. 138. Issued by the U. S. Department of Agriculture. An illustrated bulletin giving many details concerning the national forests of the far Northwest.

*Coordination in Part-Time Education.* By Margaret M. Altucker. Bulletin No. 3. Part-time Education Series No. 4. Issued by Division of Vocational Education, University of California. This deals with educational salesmanship, promoting instruction, placement, personal advice, community cooperation, etc.

*The Horse and the Tractor.* An economic study of their use on farms in Central Illinois. Bulletin No. 231. Issued by the Agricultural Experiment Station, University of Illinois, Urbana, Illinois.



## Save Your Drill Points

You can make the pressure exactly right for each separate job—with the “Yankee” Automatic Push Drill No. 44—and save breakage of drill points.

The adjustable tension spring makes this possible. No other tool has it.

Boring a  $\frac{1}{16}$ " hole in brittle stuff you turn cap on the handle to left. Tension is eased and fine drill point is protected. With a bigger drill in tough wood, turn cap to right, increasing tension.

Seven different tensions! Eight drill points,  $\frac{1}{16}$ " to  $\frac{1}{64}$ ". Practically a special tool for every job!

## “YANKEE” Automatic Push Drill No. 44

Lets you work faster and better. Drill points are held conveniently in magazine in handle, as illustrated. It opens UP. No need to turn tool upside down to change drills. All drills in sight at once.

Here's the “Yankee” Quick Return Spiral Ratchet Screw-driver No. 130. The spring in the handle makes it as unique a tool as the No. 44 “Yankee” Push Drill.

Another “Yankee” Automatic Push Drill—No. 41—is made without adjustable tension for workers not requiring the adjustable feature.

### Your Dealer Can Supply You

The whole list of ingenious “Yankee” Tools are pictured and explained in this free “Yankee” Tool Book. Hand, breast, chain, and bench drills; tap wrenches, vises, screw-drivers. Write for your copy today.



NORTH BROS. MFG. CO., Philadelphia

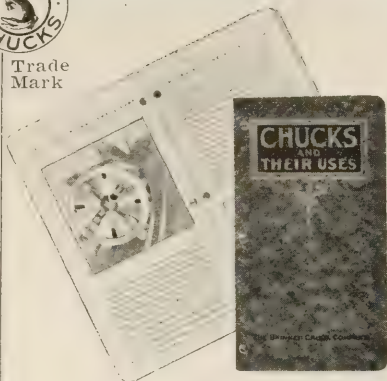
# “YANKEE” TOOLS

*Make Better Mechanics*





Trade  
Mark



## For Better Chuck Service

We have manufactured chucks for thirty-odd years, and during this time have naturally acquired much data and information not in the possession of chuck users generally. We felt that this information, placed for ready reference in the hands of those interested in chucks, would help them to secure the fullest measure of service from their chucks. Therefore, we have just published a conveniently sized hand-book entitled

## "CHUCKS AND THEIR USES"

Valuable to Vocational Directors  
and Students

Those interested will receive a copy of this book without charge. It includes:

A history of chucks, and their development—

A full description in everyday language of the different types of standard chucks—

Suggestions for the proper care of chucks—

Best method of fitting chucks to lathes—

Suggestions for general shop practice.

A number of these books, distributed among the students in your school shops, should prove of value. A copy will be sent free upon request to anyone giving personal name and occupation.

Write for your copies now. No Charge.

**THE SKINNER CHUCK CO.**

NEW BRITAIN, CONN., U. S. A.

Established 1887



### FIELD NOTES—(Continued)

three-hour session came as a request from the men who prefer it to two hours three times a week."

THE PULLMAN FREE SCHOOL OF MANUAL TRAINING, founded by George M. Pullman and located at Pullman, Ill., has received an additional gift of \$250,000 from Mrs. Pullman who has recently died.

DURING THE TWO WEEKS from April 13-28 the Guild of the Needle and Bobbin Crafts and the Needle and Bobbin Club held an exhibition of the needlework of foreign-born women at the Arden Gallery, New York City. The exhibition illustrated "the New World's debt to the Old World's needle work." The exhibition was made up chiefly from private collections. It was assembled with great care by a committee of experts selected from the Guild, of which Miss Gertrude Whiting was the chairman.

THE GROWTH and development of trade schools in Connecticut from two schools in 1910 operated with an appropriation of \$100,000 to nine schools at present with total state and federal appropriations of \$572,048 is described in the current issue of *Connecticut Schools*, a monthly publication of the state board of education. Nineteen trade subjects

### SUMMER SESSION

## School of Applied Arts

296 Boylston St., Boston, Mass.

Under Management of  
**TIDE OVER LEAGUE**  
Seventh Year.

### Thorough Individual Instruction

Elementary and Advanced Courses in:

Weaving, Woodwork, Basketry,  
Design, Leatherwork,  
Rug Making.

**STRONG COURSES IN  
OCCUPATIONAL THERAPY**

**Summer Recess  
July 29 to September 15**

Date of admission arranged upon application. Address Director,

MISS MARY IRVING HUSTED.

# Seventh Annual Catalog "Hard-to-Get" Materials

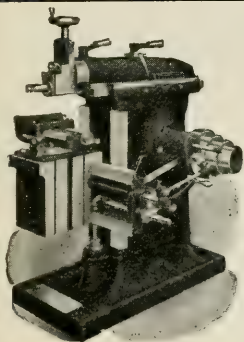
OUR new catalogue, covering the school year of 1921-1922, will be out the last of August. This Seventh Annual Catalog of "Hard-to-Get" Materials, will show many new additions to our line. You will be surprised at the new projects you can now undertake, because of our being able to furnish you with the "Hard-to-Get" parts.

We want every Manual Training Instructor to get this catalogue. A copy will be printed for you, but you may not get it unless you send us your name at once and inform us to what address your catalogue should be mailed in the Fall. Write today!

## Thurston Manual Training Supply Co.

Jobbers and Manufacturers.

Anoka, Minnesota.



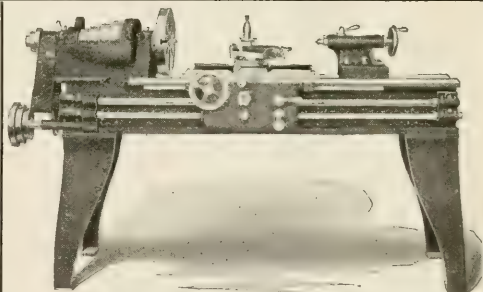
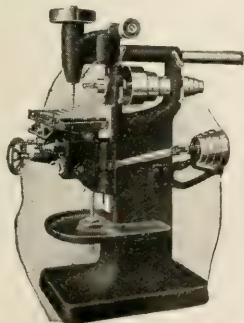
### Steptoe SHAPERS and MILLERS

Steptoe Shapers and Millers are used in a large number of school shops because they are easy to operate and practically fool proof.

Send for our catalogue and learn more about the machines built by a firm with 75 years of experience in the manufacture of high grade tools.

**THE  
JOHN STEPTOE  
COMPANY**

Industrial Education  
Department  
CINCINNATI, OHIO



**COMPLICATED MACHINERY  
is not adapted for school work**

### STANDARD ENGINE LATHES

are of simple design, combining accuracy with the highest quality of workmanship and materials.

Send for descriptive matter of this medium price machine which has been especially designed for school work.

"QUALITY WITHOUT FRILLS"  
Sizes 14"—16"—18"—20"

**THE STANDARD LATHE WORKS**  
2951-61 Colerain Ave. CINCINNATI, OHIO



## TOOLS, LIKE TEXTBOOKS,

when used in schools, must be modern and thoroughly reliable. Manual training schools should equip with

# STANLEY

## CARPENTERS' TOOLS

—the finest tools made—the choice of skilled mechanics. Look for the Stanley mark of quality. You'll find it on the best wrought steel hardware, too.

## IN THE PANEL ABOVE

Stanley Rules—Highest quality well seasoned wood, finely finished and cleanly marked, with all joints and trimmings of brass. A style for every use.

Stanley Breast Drills—In single and double speed models, with three-jaw chucks, alligator and universal jaws.

Stanley Hammers—Heads of special steel, carefully forged, hardened and tempered, and fastened to selected second growth hickory handles in a way that makes loosening practically impossible.

Stanley Planes—"Bailey" and "Bedrock" are universal standards.

Stanley Vises—Especially adaptable for jewelers and makers of small tools.

Stanley Screw Drivers—A full range of styles and sizes.

Stanley Bit Braces—An unusually good line of improved tools.

Stanley Butt Gauges—The butt gauge comprises rabbet gauge, marking gauge and mortise gauge of a scope sufficient for all door hanging operations.

Stanley Levels—The most complete line on the market. A style and size for every need.

Send for complete catalog, 15D.

**THE STANLEY RULE & LEVEL PLANT.**  
THE STANLEY WORKS  
NEW BRITAIN, CONN. U.S.A.



## FIELD NOTES—(Continued)

are now taught and the following statistics are furnished by F. J. Trinder, director of trade and vocational education, as to enrollment in various courses: Trades and industries, 2,587; night schools, 1,323; agriculture, 67; home economics, 142.

There are now trade schools at Bridgeport, New Britain, Putnam, South Manchester, Torrington, Danbury, Meriden, Stamford and Kent.

The work of house building is proving popular, Mr. Trinder says. This work includes carpentry, plumbing, heating, electric wiring, painting and decorating. A great deal of valuable work is being done with former soldiers.

L. W. WAHLSTROM, secretary of the Vocational Education Association of the Middle West has obtained the following data concerning the attendance at the Minneapolis meeting:

Total paid up memberships, 647.

Total paid up memberships in attendance at Minneapolis, 595.

No. of delegates attending with expenses paid by institution or school board, 156.

No. of delegates paying their own expenses, 75.

No. of delegates attending with expenses partly paid (R.R. fare), 8.

YOUNGSTOWN, OHIO, has planned a \$2,000,000 high school and has let the contract for a part of the first unit for \$592,000. This building when completed will have all the standard shops of the cosmopolitan high school: wood-working, machine shop, forge, electric shop, print shop, book bindery, sheet-metal shops, automobile sho, etc. In addition, there will be ample accommodations for cooking, sewing, millinery, etc.

THE STATE TRADE SCHOOL at New Britain, Conn., has made arrangements to open a class in general masonry. Thomas Rutherford has been engaged as instructor.

## PERSONAL ITEMS

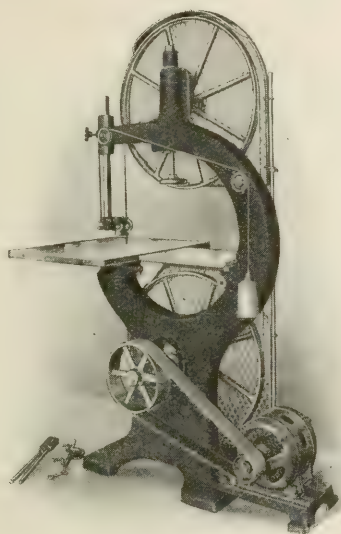
J. NEWTON NIND, president of the Periodical Publishing Co., Grand Rapids, Mich., and managing editor of *The Grand Rapids Furniture Record* and *The Furniture Manufacturer and Artisan* died at his winter home in St. Petersburg, Fla., on March 5th. "No man interested in furniture trade papers was as well known and universally respected as J. Newton Nind." "In addition to his interests in the industries he was a student and lover of the fine arts. One of his foremost ambitions in life was to create an art institution in Grand Rapids, and altho he passed away before seeing this wish realized, he was instrumental in starting a movement that is now well under way toward achieving this end."



# EQUIP WITH



## Woodworking Machinery



**FAMOUS**  
36 Inch Wheel Band Saw

**A STANDARD** machine for commercial shop and one of our many machines especially suited to manual training needs. Motor driven, well guarded, accurate, and durable.

Fourteen thousand of these splendid band saws now in use.

**Put your problems up to  
Our Engineering Division**

*Ask for Catalog No. 20*

**THE SIDNEY TOOL CO.**  
Sidney, Ohio

## WILEY TEXTS FOR COURSES IN BUILDING

### HATT & VOSS' CONCRETE WORK Volumes I and II

By William K. Hatt, C.E., Ph.D.,  
and Walter C. Voss, B.S.

Practical guides for workmen on the job, students of concrete design and construction, and contractors.

Vol. I—451 pages, 5¼ by 7½—224 figures, 20 plates—\$4.00 postpaid.

Vol. II—In Press, Ready, May 15th.—\$2.00 postpaid.

### SPALDING'S MASONRY STRUCTURES By Frederick P. Spalding

Gives fundamental principles involved in the design and construction of masonry structures. A practical introduction to the subject.

404 pages, 6 by 9—129 figures—\$3.50 postpaid.

### By R. Burdette Dale, M.E. ARITHMETIC FOR CARPENTERS AND BUILDERS

Treats arithmetic as used in the daily work of the carpenter and builder.

231 pages, 5 by 7—109 figures—\$1.75 postpaid.

### DRAWING FOR BUILDERS

An extremely practical text for the student who wishes to become an architect's draftsman.

166 pages, 10¾ by 8—69 figures—\$2.50 postpaid.

Let us send you Free Examination copies.  
Mail the coupon TODAY.

#### USE THIS COUPON

John Wiley & Sons, Inc.,  
432 Fourth Avenue, New York City.

You may send me the following on 10 days' approval:

Hatt & Voss' CONCRETE WORK  
Spalding's MASONRY STRUCTURES  
Dale's ARITHMETIC FOR CARPENTERS  
AND BUILDERS  
Dale's DRAWING FOR BUILDERS

I agree to pay for the books or return them within 10 days of receipt.

Also please send me a copy of your Vocational News and put my name on your mailing list.

Name.....

Address.....

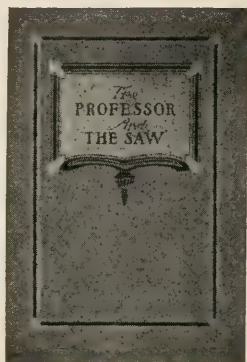
If teacher, state school.....

If not teacher, give reference.....

M T M-21

# Instructors and Pupils

Get This Booklet Free



An interesting little story as well as instructive which treats with saws and their uses in Manual Training lines. Details as to use of Carpenters' tools and the proper equipment for a manual training department with illustrations and drawings showing details and specifications for building boats, furniture and cases are also definitely given. This book is one which every instructor or pupil will want. It is yours for the asking. Send in your request today. Ask for The Professor and The Saw.

**Simonds  
Manufacturing Co.**

*"The Saw Makers"*

**Fitchburg, Mass.**

5 Factories

12 Branches

## Marqueterie, Inlay Borders and Purflings for

Manufacturers and Vocational  
Schools

Insets for Trays, Panels, Cabinets, etc. carried in stock.  
Natural and Transformed Veneers in great variety.  
Lines in Holly, Satinwood, Box, Mahogany and Black

**J. BERNARD CO.**

422 to 30 East 53rd St. New York

### PERSONAL ITEMS—(Continued)

**J. J. RITTER**, formerly director of vocational education and manual training in the public schools of Fort Wayne, Ind., is now chief engineer in charge of production and experimental work for The Visible Pump Co., of Fort Wayne. This company manufactures gasoline and oil pumps and other air pressure systems. Mr. Ritter is a mechanical engineering graduate of Purdue University who received his pedagogical training at Bradley Institute and Teachers College of Columbia University. His work in the public schools is now divided between **J. H. Hines**, who is in charge of the vocational work and **C. A. Scott**, who is supervisor of manual training.

**ROBERT B. KELLAR**, until recently director of the Johnson School of Arts and Trades, is now in charge of the Industrial Service Division of the International Correspondence Schools of Scranton, Pa. Mr. Keller is a graduate of Purdue University, where he received his degree in mechanical engineering. Since then he has had charge of apprentice instruction for the Erie Railroad, and the D. L. & W. system, has been an associate professor of railway engineering at the University of Illinois and, beginning in 1915, has organized the Johnson School at Scranton.

## Build Your Own PHONOGRAPH

Instructive—arouses pupils enthusiasm—provides one of the best problems in cabinet making.

Let Your Pupils Build  
Choraleon Phonographs

We furnish, plans, blue prints, motors, tone arms, case material—in fact, everything required. Full instructions. Choraleon's have fine tone. Play any record.. Ask for particulars



**CHORALEON PHONOGRAPH CO.**  
521 7th St., Elkhart Ind.

## CABINET CLAMPS



Where Black Bros. Clamps are known there is no Second Choice.

**KNOW THEM**

Send for bulletin today.

**THE BLACK BROS. CO.**  
Mendota, Ill.

## TRADE NOTES

### A TOY MAKING CONTEST

**T**HE Prang Company of Chicago has announced a National Contest to encourage the making of artistic toys by boys and girls in the fifth, sixth, seventh and eighth grades in public schools. There are 56 prizes offered, making a total of \$250.00. The contest closes June 1st. All toys must have the O. K. of the supervisor of art or the grade teacher before being sent in. It is also suggested that whenever possible, teachers have a local contest of toy making, and that only the prize winners be entered in this National Contest. In order to be eligible, the toys must be decorated with "Enamelac," the air-drying waterproof art enamel manufactured by The Prang Company. A circular of "Enamelac" with full directions will be sent free on request. The toys may be made of wood or metal, and may be stationary toys or action toys. Full information regarding the Contest can be had from The Prang Company, 1922 Calumet Avenue, Chicago.

### STANDARD ENGINE LATHES

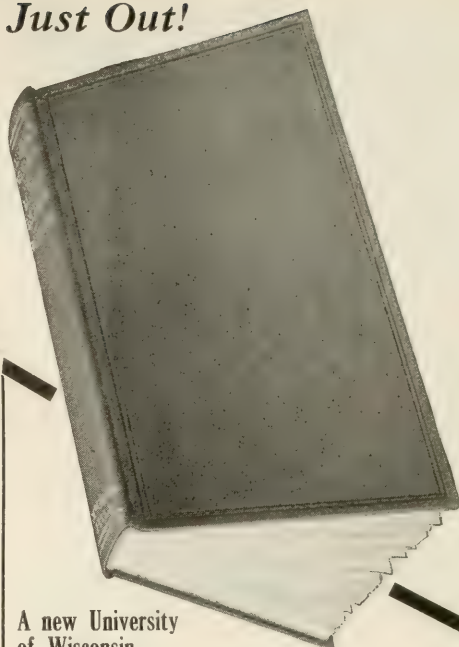
The "STANDARD" ENGINE LATHE has been placed on the market to meet the demand for a machine without expensive quick-change arrangements. The manufacturers say that they have succeeded in producing a machine that can be depended upon for high production with accuracy and durability—a tool of high quality at a moderate price. It is a machine of "quality without frills" which they claim is ideally suited for school shops, being devoid of intricate parts.

## TOOLS

For Manual Training Shops.  
Send your inquiries to and get the especially low prices quoted by

**MONTGOMERY & CO. Inc.,**  
105 Fulton Street New York City

**Just Out!**



A new University  
of Wisconsin  
Extension Text

## LONGFIELD'S Sheet Metal Drafting

*Published in book form and in loose-leaf form*  
236 pages, 320 illustrations—\$2.25  
By Ellsworth M. Longfield

*Head of Sheet Metal Dept. Boston Trade School*

The underlying principles of sheet metal  
pattern drafting

### CONTENTS

I.—Rectilinear Figures. II.—Wired Cylinders. III.—Cylinders Cut by Planes. IV.—Intersecting Cylinders. V.—Cones of Revolution. VI.—Intersecting Rectangular Prisms. VII.—Planning for Quantity Production. VIII.—Sections Formed by Cutting Planes. IX.—Frustums of Rectangular Pyramids. X.—Combinations of Various Solids. XI.—Frustums of Cones. XII.—Return and Face Miters. XIII.—Triangulation of Scalene Cones. XIV.—Triangulation of Transition Pieces. XV.—Developments by Sections. XVI.—Developed and Extended Sections.

## FREE EXAMINATION COUPON

**McGRAW-HILL BOOK CO., Inc.**  
370 Seventh Ave., New York

You may send me on 10 days' approval

Longfield's

**SHEET METAL DRAFTING \$2.25**

I agree to pay for the book or return it,  
postpaid, within 10 days of receipt.

Signed .....

School .....

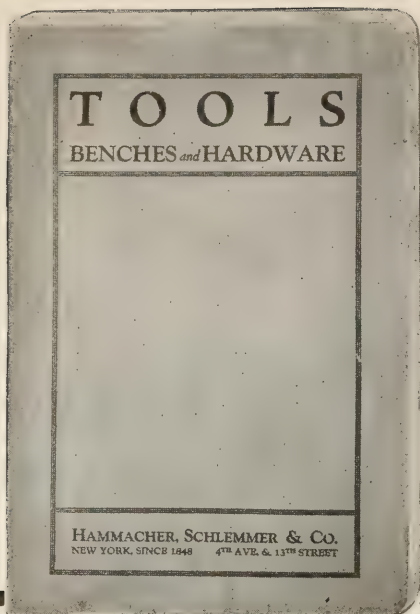
Official Position .....

Address .....

.....

M. T. M. 5-1-21





## GOOD TOOLS ARE ESSENTIAL FOR GOOD WORK

Since 1848 we have adhered to one policy—to handle only the very best in quality.

Our 300 page catalog illustrated above is of particular value to those interested in manual or vocational training. If you haven't a copy ask for Catalog No. 224.

### HAMMACHER SCHLEMMER & CO.

Hardware, Tools and Supplies

New York, Since 1848, 4th Ave. and 13th St.

## "JORGENSEN"

Peerless Hand Screws

are not only Adjustable but excel on ordinary straight work.

Steel Spindles  
Steel Nuts  
Hard Maple Jaws  
**Adjustable  
Clamp Co.**

216 N. Jefferson St., Chicago



### TRADE NOTES—(Continued)

Information regarding these lathes will be gladly furnished to readers who are interested in the purchase of a lathe if they will address the manufacturers, The Standard Lathe Works, 2951-2961 Colerain Ave., Cincinnati, Ohio.

### CABINET CLAMPS

How ARE YOUR CLAMPS? For successful work good clamps are so necessary, and all too often are either poorly made or in bad repair. An inspection of clamp equipment should be taken at intervals. The Black Bros. Co. are manufacturers of clamps of known quality, made to do their work well and to last long. During the war Black Bros. clamps were purchased in large quantities by the Government and they are now offering their quality goods to the schools. Their address is The Black Bros. Co., Mendota, Illinois.

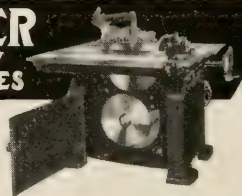
TEACHERS CONFRONTING PROBLEMS involving inlay, marquetry, etc., will be pleased to learn of a firm making a specialty of this kind of work. J. Bernard Co. carry in stock insets for trays, panels, cabinets, etc., lines in holly, satinwood, box, mahogany and black and can be depended upon to furnish high-grade goods with the skill acquired thru many years in the business. Their address is J. Bernard Co., 422-30 East 53rd Street, New York, N. Y.

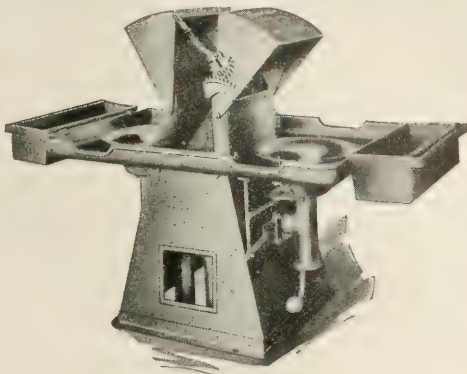
### MITER SAW BENCHES

The  
"Tannewitz"  
Universal  
Double  
Revolving

Arbor Saw Bench with Sliding Table and Taper Pin Gauges is the only logical tool for the wood shop where frequent setting up is the rule and accuracy is the goal. Send for bulletin.

THE TANNEWITZ WORKS  
GRAND RAPIDS, MICH.





*"Buffalo"*

The Buffalo Forge Company are the inventors and original manufacturers of the Down Draft Forge.

This forge is designed to remove gas and smoke from the room thereby keeping the air in the class room pure and fresh.

Our catalog 205-31 contains complete data on the Buffalo line of manual training forges and equipment, and contains notes on forge shop practice with exercises. *Write for your copy.*

**Buffalo Forge Company**

**BUFFALO, N. Y.**



## Black Walnut

MANUAL TRAINING LUMBER

### Special Candlestick Offer

25 pieces choice Black Walnut 12" length by 1 3/4" diameter selected specially for Turning and Carving. Quality will be guaranteed equal to specimen illustrated, which was turned and carved by a sixteen year old boy from Nevada. Delivered free to any point in United States for \$5.00.



**BLACK WALNUT TREE**  
250 Years Old      4 ft. Diameter



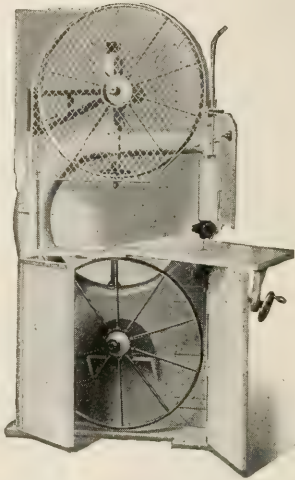
Manufactured by  
**FRANK R. PORTER**  
Washington, D. C.

*Write for special price lists  
on combination lots.*



# West Side Iron Works

**Manufacturers of  
MOTOR DRIVEN AND  
BALL BEARING  
BAND SAWS**



36" BAND SAW

**APPLICABLE TO ALL  
CONDITIONS**

**DIRECT MOTOR DRIVE  
MOTOR DRIVE BY  
SILENT CHAIN AND PINION  
MOTOR DRIVE BY BELT**

Manufacturers of

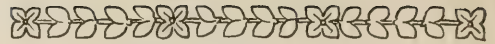
**14" BENCH BAND SAW  
36" BAND SAW  
42" BAND SAW  
42" BAND RIP SAW**

**WEST SIDE IRON WORKS**

Office  
1219-1225  
Washington Blvd.  
CHICAGO, ILL.



Factory  
GRAND  
RAPIDS,  
MICHIGAN



## TRADE NOTES—(Continued)

### LINOLEUM BLOCK PRINTING

Printing from linoleum, on which a design has been cut, is proving to be so popular as a device for art expression, that a company has been formed to promote the sales of linoleum-block printing equipments.

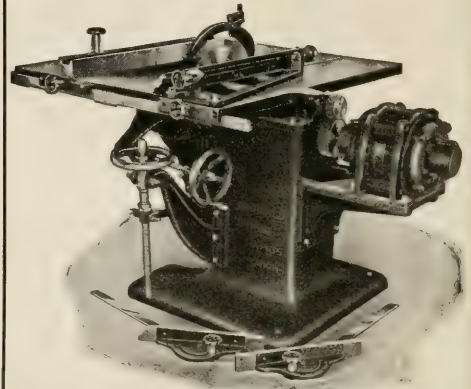
The organizers of the company are confident that this phase of the printing art will become very popular and that installations will be made in most grade schools where design is taught.

The linoleum-block printing outfits designed by the new company tho not elaborate, are quite practical. The outfits include a press, an imposing stone, accessory cabinet, cutting tools, paints, printing inks, and linoleum blocks. The company will also handle a grade of linoleum for printing purposes, mounted type-high and treated with a special preparation to facilitate cutting and printing. Inquiries should be addressed to the Linoleum-Block Printing Supply Company, 263 Whiton Street, Jersey City, New Jersey.

### SHOE REPAIRING SUPPLIES

GRADUALLY new forms of hand training find a place in the school curriculum. With the pressure

## SAW TABLES For MANUAL TRAINING



This cut shows our motor driven spiral gear saw table. No countershaft, no belts. Tilting or stationary tops. Write for circular and prices on our entire line. Address

**ALEXANDER DODDS CO.**  
451-453 Monroe Ave., N.W.  
GRAND RAPIDS, MICHIGAN, U. S. A.



# School Printing Outfits



Get Barnhart's estimate on Printing equipment for your School. Expert service in selecting the Machinery, Type and Material that will represent the greatest value for practical purposes and for correct training according to the latest methods of the Printing Craft

## Barnhart Brothers & Spindler

School Outfitting Service Department—Monroe and Throop Streets, Chicago

*Branch Houses in Eight Cities*

Chicago Washington Dallas Saint Louis Kansas City Omaha Saint Paul Seattle

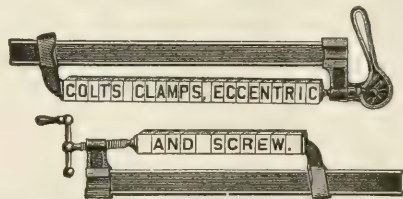
### Tools for Sheet Metal Work

Manual training, vocational and technical schools are invited to communicate with us regarding equipment of shops for sheet metal work, the importance of which is constantly increasing, owing to the popularity of sheet metal as a substitute for other materials.

Ask for catalog M T 56.

**NIAGARA MACHINE AND TOOL WORKS**  
BUFFALO, N. Y.

Manufacturers of  
MACHINERY FOR WORKING SHEET METALS



Forty styles of Quick Acting Clamps for the Worker in Wood, Cement and in the trades generally.

Your dealer will supply you.  
Ask for catalog No. 296.

**BATAVIA CLAMP CO.**

237 Center Street

BATAVIA, N. Y.

### MAYDOLE HAMMERS



Adze Eye  
Nail Hammer



Machinists'  
Hammer



Blacksmiths'  
Hammer



Copperworkers'  
Hammer



Adze Eye  
B. F. Hammer

JUST A FEW OF OUR HAMMERS

All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request

THE DAVID MAYDOLE HAMMER CO.

NORWICH, N. Y.

# Teach Your Boys TO SAVE---TO EARN---TO WORK



## THRU SHOE REPAIRING THE TRIPLE TRAINING

THIS subject interests every boy. It is one of the best forms of hand-and-eye training, and in addition it has these advantages:

- Promotes Comfort and Health of Student.
- Saves Money for the needy Student.
- Trains for a Profitable Vocation.

Only a small space and low cost of equipment is needed to successfully carry on the work.

*Write for full information.*

## Shoe Repair Supply Co.

PEORIA, ILLINOIS

## TEACH THRIFT

WITH

## PERSONAL EXPENSE BOOK

By JANET CATION THURSTON

*Every Student Should Use One*

Arranged to meet the requirements of school and college students. It provides ample space, suitable rulings, headings, for expenditures during twelve months with yearly summary, etc. While prepared for students, it is well suited for personal expenses of almost anyone. Begin at once.

Price, 40 Cents.

Discount in Quantities.

## The Manual Arts Press

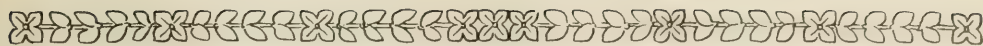
PEORIA, ILLINOIS

### TRADE NOTES—(Continued)

of high prices and other war conditions, many schools have come to realize the value of teaching shoe repairing. Lack of reliable information regarding tools, materials, supplies, need no longer interfere with the installation of shoe repairing courses or with their success. Full information can be obtained by writing to the Shoe Repair Supply Co. of Peoria, Illinois. This reliable firm is fully equipped to render valuable service to schools doing work along these lines.

AT THIS TIME OF THE YEAR when instructors and supervisors are planning their equipment and needed supplies for fall a valuable help is Catalog No. 547, published by Hammacher, Schlemmer & Company of New York. The catalog deals with tools, benches and hardware. Three hundred and twenty 6" x 9" pages abundantly illustrated are devoted to various lines of equipment and tools needed in the school shop. It shows a complete line, and altogether is one of the most helpful catalogs for the use of shop teachers in writing specifications which has come to our attention.

Hammacher, Schlemmer & Company are well known in the school shop field, and are recognized as carrying many of the best lines available. They are located at 4th Ave. and 13th St., New York, City.



## BOOK NOTES

WHILE looking over the books of The Manual Arts Press at a recent convention, a prominent technical high school principal made a discovery. He picked up *Electrical Construction* by Weber, looked it over rapidly, and then said, as tho much surprised, "I didn't know you published a book on electrical construction. That is just what I have been looking for. Send me five copies at once."

There are probably other principals who, in these times of expansion of the industrial curriculum, are looking for a book of wiring problems, and have not yet discovered that Walter B. Weber, a thoro practical electrician and successful teacher in the Seneca Vocational School of Buffalo has written the book they want. A state supervisor of industrial education said of this book a few months ago, that "it was the best of its type on the market."

THE following review of *Elementary Forge Practice* by Harcourt and *Elementary Machine Shop Practice* by Palmateer appeared in the January number of the *School Review* published at the University of Chicago Press:—

"The difference between using a well-written, well-organized text and using no text at all is often the difference between teaching with a conscious purpose and teaching in a haphazard way. Industrial arts work has generally been handicapped by traditions which insist that experience and knowledge can only be transmitted to another thru direct personal contact and observation. The value of broad contacts formed thru the medium of printed material has not been fully recognized. That it is not impossible to transmit technical information and the results of experience by means of the printed page is well demonstrated by Harcourt in his volume on forge practice.

"The book has much valuable information on materials and equipment which should cut down the amount of time required for lecture work on these subjects. The projects selected have been chosen on the basis of materials and processes involved. With such a type of organization the work outlined can be easily supplemented by special projects which the instructor may wish to introduce. Illustrations of the steps or operations necessary in making each project are usually complete and adequate.

"A second recent volume of a somewhat similar plan and organization has to do with machine shop work. The author has centered blocks of instructional material around the various machines that are used in the shop, supplementing these with a chapter on bench and vise work and another

treating of lathe tools and tool steel. The processes involved in each unit of instruction are brought out by a number of carefully chosen problems for each. The sequence of operations for each problem is outlined in detail.

"Thruout the text there is a great deal of informational material concerning tools, equipment, and the various kinds of stock used. The illustrations and cuts of machines are particularly complete.

"At the end of each unit of instruction a list of questions is given to focus the thinking of the student on the important phases of the work covered. The questions are well chosen and of a nature to stimulate active thinking and investigation on the part of the pupil.

"The volume should prove a valuable addition to any shop library as a supplementary text. For the teacher of large classes of beginners it should lift the burden of much class work and explanation if placed in the hands of the pupils as a text."

CONSIDERING the authority of its source, the following review is worthy of repetition:—

"A book which should be of decided interest to students is *Furniture Upholstery*, by Emil A. Johnson, and published by The Manual Arts Press. In an exceedingly small compass the author has succeeded in describing the different methods of upholstering in enough detail to warrant the student to make a beginning at this sort of work. The book is divided into three parts, the first relating to the history, the tools and the materials, the second to upholstery without springs, and the third to upholstery with springs. It is well illustrated with engravings and halftones showing different stages of upholstery work."

—THE UPHOLSTERER.

THE *Vocational Summary* published by the Federal Board for Vocational Education, Washington, D. C. will be placed on a subscription basis beginning with the May number. The price will be 50 cents a year in advance. This charge is to cover the cost of paper, presswork and binding on subscription copies. The Board is not going into the magazine business very extensively, but it is trying to meet a demand without drawing too heavily upon the Government funds. This action, too, will eliminate certain requests for the paper that come merely because it is free and not because it is used enough by them to pay for printing.

THE LATEST BOOK to come to our desk is "A History of Industry" by Ellen L. Osgood of the Haaren High School, New York City. It is published by Ginn & Co.





# DIXON'S ELDORADO

*"the master drawing pencil"*

## Joseph Dixon Crucible Company

Pencil Dept. 7 J.

Jersey City, N. J.

Only Genius can overcome the handicap of poor tools—you owe it to your pupils, as well as to yourself, to see that they have the rightest tools for their drawing,—our suggestion to *try out* in your classes Dixon's EL-DORADO.

### SAMPLE OFFER TO TEACHERS

Dixon's Eldorado is made in 17 leads. Tell us whether you teach mechanical or freehand drawing and we will mail you suitable samples.

## IMMEDIATE DELIVERY ON



## Drawing Instrument Sets

WRITE FOR CATALOG AND  
PRICE LIST TODAY.  
DO NOT DELAY YOUR ORDERS—  
SUPPLY LIMITED.

### FREDERICK POST COMPANY

Dependable Supplies for  
Engineers, Architects and Schools.  
**CHICAGO**

### SIMPLIFY GRINDING

With Mummert-Dixon Oilstone Grinders. Five wheels for almost every class of grinding. They accomplish the work quickly and accurately. With this machine your students can experience the pleasure of sharp tools.

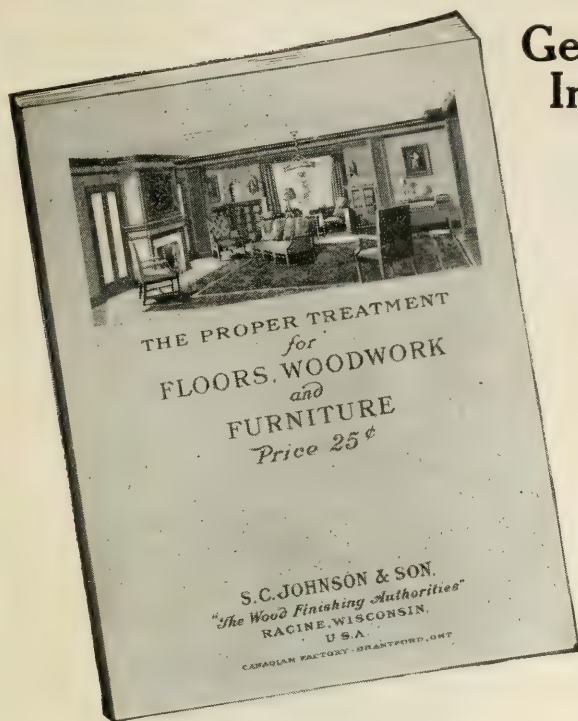


The Modern  
Edge Tool  
Sharpening  
Machines.

The  
Standard  
for all  
Industrial  
Schools.

Five  
Leading  
Features  
Coarse Oilstone  
Wheel  
Fine Oilstone  
Wheel  
Emery Wheel  
Grinder  
Cone  
Leather  
Wheel

Furnished for motor drive or with counter-shaft  
Send for full descriptive bulletin  
**MUMMERT-DIXON CO., Hanover, Pa.**



## Get this Valuable Instruction Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing and should be in the hands of every wood finishing instructor. It is full of valuable information on finishing all wood—soft and hard. Considerable space is devoted exclusively to the finishing of manual training models. This book is the work of experts—illustrated in seven colors.

### How To Get It Free

Go to your best dealer in paints and ask for a copy of Johnson's book "*The Proper Treatment for Floors, Woodwork and Furniture.*" If he cannot furnish this book write us, giving the name of your dealer, and we will mail you a copy free and postpaid.

## JOHNSON'S ARTISTIC WOOD FINISHES

Johnson's Artistic Wood Finishes are particularly adapted for manual training work as they may be applied by the youngest and most inexperienced pupils with good results. Johnson's Artistic Wood Finishes are standard for manual training—they are being used all over the United States and Canada for this purpose.

The perfection of Johnson's Artistic Wood Finishes has been the work of years. You get the benefit of our experience—of our money expenditure—of our knowledge of woods. Our plant is equipped with the best up-to-date mills and machinery and every department is in the hands of experts.

Our line of Artistic Wood Finishes is complete—it includes:

*Johnson's Prepared Wax*

*Johnson's Wood Dye*

*Johnson's Crack Filler*

*Johnson's Paste Wood Filler*

*Johnson's Perfectone Undercoat*

*Johnson's Perfectone Enamel*

*Johnson's Electric Solvo (varnish remover)*

*Johnson's Floor and Finishing Varnishes*

You will find this entire line described and listed in our booklet. Any time specific information is desired, or whenever you want specially finished wood panels, do not hesitate to write us. We solicit correspondence with Manual Training Instructors.

**S. C. JOHNSON & SON, Dept. MT5, Racine, Wis.**

*"The Wood Finishing Authorities"*

## "What Kind of a Saw Shall I Use?"

**Y**OU are teaching the boy to use tools because some day he will need that knowledge. He may become a mechanic who will make his living by the use of such tools, or he may be just a home owner who likes to do odd jobs himself.

To assist you in explaining to your pupil why he should use a certain type of saw or tool for his particular job, we have just published "The Disston Saw, Tool, and File Book." The following quotation from the Introduction of the book explains it:

"In the following pages we have attempted to explain the uses of different types of saws. Too often an amateur saw-user expects a rip saw to cut across the grain successfully, or makes some other natural mistake. It is not lack of intelligence that causes these errors, but lack of information. Many men do not even know that there is a difference between cross-cut and rip saws.

"However, it is human nature for a man, who has bought a saw he didn't want, to feel a little disgruntled; for him to feel that he has been badly treated, or that the saw is not a good one."

"The aim of this book is to offset that possibility.

"We have given a brief description of what the different types of saws are for, whether for cabinet-making or building a coal bin."

"Furthermore, knowing that the best tool of any kind cannot give its best service unless it is properly cared for, we have included a short article on 'How to Sharpen a Saw.' There is also a brief story 'How a Saw Cuts' which is included because it has proved to be of great interest to those who have seen it."



Upon request the books will be sent you for your personal use, or for the use of your classes.

**HENRY DISSTON & SONS, Inc.**  
**Philadelphia, U. S. A.**



# MANUAL TRAINING MAGAZINE

EDITORS CHARLES A. BENNETT, Peoria, Illinois.

WILLIAM T. BAWDEN, Assistant to Commissioner of Education, Washington, D. C.

ASSOCIATE ARTHUR D. DEAN, Professor of Vocational Education, Teachers College, New York City

EDITORS FRANK M. LEAVITT Associate Superintendent Public Schools, Pittsburgh, Pa.

WILLIAM E. ROBERTS, Supervisor of Manual Training, Public Schools, Cleveland, Ohio.

Business Manager L. L. SIMPSON.

Published monthly by The Manual Arts Press, 237 N. Monroe St. Peoria, Illinois.

Subscription Price, \$1.50; Canada, \$1.80; Foreign, \$2.00. Single Copies, 25 cents; Foreign, 30 cents.

Subscriptions, remittances, and manuscripts should be sent to THE MANUAL ARTS PRESS, Peoria, Illinois.

## CONTENTS

VOCATIONAL EDUCATION IN THE PITTSBURGH SCHOOLS.....	Frank M. Leavitt	377
THE HOME SHOP AS AN EXTENSION OF SCHOOL WORK.....	William J. Rogers	381
CRAFTS AND EDUCATION IN BRITISH PRISONERS-OF-WAR CAMPS (Illustrated).....	James T. Baily	383
THE RELATION OF FOREMAN TRAINING TO THE EDUCATIONAL PROBLEM OF A CITY.....	Thomas E. Jones	390
EDITORIAL REVIEW FOR THE MONTH.....		392
Report on Vocational Guidance—School-Community Scholarships—Western Arts Association Convention.		
A POINT OF VIEW.....	Arthur Dean	395
Yeast Cakes in Education.		
WASHINGTON CORRESPONDENCE.....	William T. Bawden	398
New Legislation in Prospect—Department of Public Welfare—Mr. Dodd and the United States Chamber of Commerce.		
IN FOREIGN COUNTRIES.....		400
Instructional Factories for Ex-Service Men in Great Britain—Industrial Education Problems in South Africa—A French Textile School—More Metalwork in Manual Training—America and Britain.		
PROJECTS, PROBLEMS AND NOTES.....		402
The Science of Driving Nails—Identification of Oak Woods—Electrical Construction Problems—Piano Bench and Rocker.		
CURRENT PUBLICATIONS.....		407
FIELD NOTES.....		IV
California Notes—Southeastern Items—Around New York—Foremanship Training Conference at Spokane—The Sloyd Training Association—New England Items.		
INDEX TO VOLUME XXII.....		XXVI
TRADE NOTES.....		XXVI
INDEX TO ADVERTISEMENTS.....		XXXIII
BOOK NOTES.....		XXXV

*This Magazine is kept for sale at McClurg's in Chicago, and Brentano's in New York.*

Entered at the Post Office at Peoria as Second-Class Matter. Copyright, 1920, The Manual Arts Press.

## FIELD NOTES

### CALIFORNIA NOTES

**S**ITUATED about fifty miles south of San Francisco is a city, claiming a population of nearly sixty thousand, which has recently put itself on the map as one of the most progressive educational communities in the state of California. This city is San Jose. The justification of this statement concerning San Jose comes, in large part, from the fact that quite recently the San Jose School Department expended close to \$150,000 for the erection of a mechanic arts addition to its already large, cosmopolitan high school.

schools there. Previous to that time no manual training in any form whatever had been given in that city. Now, manual training is conducted in all of the grades from the fifth to the eighth, where it is compulsory; and is offered for election in all of the grades of the high school. Roy Thompson, who was the first assistant the writer had in the early days of the development of manual training in San Jose, is now supervisor of manual training in the grades. P. D. Croney, who was associated with the writer in the high school, is now director of industrial work in the high school. The allotment of



MECHANIC ARTS BUILDING, HIGH SCHOOL, SAN JOSE, CALIFORNIA

#### POLYTECHNIC ADDITION TO THE SAN JOSE HIGH SCHOOL

The new polytechnic addition, as they call it there, covers an area practically a block square. The building is a standard steel and glass structure, with a concrete and brick foundation, and a tile roof. It is equipped with machines and other apparatus costing about \$35,000.

The courses offered now by the school, embrace machine shop practice, forging and acetylene welding, electrical work, sheet-metal work, pattern making, carpentry, cabinet making, vulcanizing, auto repair, plumbing, and drafting. The shops provided for these courses are in every case, spacious and convenient. They are constructed with a view to facilitate the handling of supplies, and to make convenient the conducting of the work. The building forms a hollow square, and large roll doors are provided so that material can be unloaded from wagons right on to the storage racks.

In view of this large advance which San Jose has recently made in the field of vocational education, it is interesting to note that twelve years ago, when the writer first came to California, it was for the purpose of introducing manual training in the

time for manual training in the elementary schools is usually generous. The fifth and sixth grades take the work one hour a day twice a week; and the seventh and eighth grades take it one and a half hours a day twice a week.

At the time of this new development in the industrial work in San Jose, three men were added to the staff. These men are Charles Knudsen, machine shop practice; Martin L. Sutphen, auto repair and acetylene welding; and Arthur C. Heinsen, sheet-metal work. Each of these three men is an expert in his line of work, and all have had teacher training in the extension center for teacher training which is described later in these notes.

Persons who are interested in the matter of school shop building construction might write to the superintendent of schools of San Jose, Alexander Sherriffs. It is his interest in vocational education which has largely been instrumental in bringing about the present progress in that field in San Jose. In fact, it was he who was responsible for having brought the writer to San Jose when the work was first established.

#### EXPANDED COURSE OF INSTRUCTION

Before the new building was constructed, the



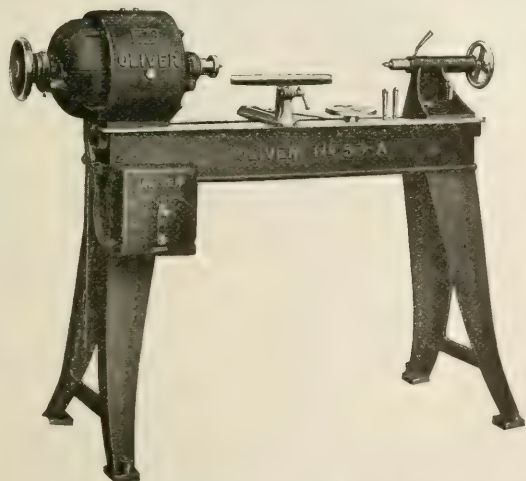
Woodworking Section, Shops, Farrell (Pa.) High School. Equipped exclusively with "Oliver" Woodworking Machinery.

## The Satisfaction that Quality Gives Spreads More Sunshine than Bargain Counter Price Tags

THE QUALITY OF "OLIVER" WOODWORKING MACHINERY  
May Be Ascertained by Writing to Any Users

Among the schools you may write to:

Berkeley High School, Berkeley, Cal.  
Scranton Technical High School, Scranton, Penna.  
University of Washington, Seattle, Wash.  
Michigan Agricultural College, Lansing, Mich.  
B. of E. New York, Philadelphia, Chicago, etc., etc.



Write for a copy of our  
general catalog illustrating  
a complete line of

Sawing, Planing, Turning,  
Sanding, Boring, Mortising,  
Tenoning, Shaping, Trim-  
ming and Grinding  
Machines.

**OLIVER MACHINERY CO.**  
Grand Rapids, Mich., U. S. A.



San Jose high school offered courses only in machine practice, cabinet making, pattern making, and elementary auto mechanics. The present expansion permits of complete courses in all of these fields and makes an especial provision of a complete four-year course in auto mechanics. The auto mechanics course is planned to include, in the first two years, machine shop practice, sheet-metal work, and acetylene welding and vulcanizing as these relate to the auto-practice field. The last two years of the course are designed to give commercial shop practice in trouble shooting, auto repair, and auto electrics.

The establishment of these various new courses in San Jose has resulted in a large increase in the attendance at that high school. The polytechnic branch provides for nearly 500 students. Thus, it is possible for a student taking academic courses to receive instruction in manual training; or it is possible for a boy who proposes to enter the trades, upon enrolling in the school, to take a straight trade course.

Because of the urgent need for trained teachers of trade subjects in San Jose, it became necessary to establish a teacher training course under the supervision of the University of California, Division of Vocational Education, in conjunction with the State Board of Education. To this course, then, were invited tradesmen to take their teacher training work in the evening. It is from this course that the new teachers were selected; and it is also from this course that, later on, other teachers will be selected.

Not far from San Jose, on the main highway, is a town called Salinas where there has recently been completed one of the finest school buildings from the standpoint of architecture, to be seen anywhere. In one section of this building, excellent provisions have been made for courses in woodworking, machine shop practice, and auto practice. It is planned, later on, since this school is in the center of an agricultural district, to erect a building sufficiently large to house an elaborate and varied equipment for the purpose of giving instruction in farm mechanics.

The head of the department, Mr. Grant, is a master in shop organization, and has devised for the auto practice course a scheme for checking up tools and materials which is worthy of any one's investigation. Since the Salinas high school is a union district high school and many of the pupils are carried to school and home again in auto busses, the students in the auto practice class have much experience with practical trouble shooting and repair.

CHARLES L. JACOBS.

## SOUTHEASTERN ITEMS

THE introduction of vocational schools for the trades and industries has not been an easy task for the supervisors located in states which are, by nature, mainly agricultural. In many cases, the towns are small and scattered, and the industries are still smaller and far apart. The handling of raw materials, rather than the production of a finished product, is predominant.

Mississippi does not lead the States in manufacturing; but the vocational leaders are working hard, and they have plans and thoughts for the future.

M. D. Broadfoot, state supervisor, reports that a splendid part-time continuation school is going on at McComb. A large evening school program is being worked out at the same place in connection with the Illinois Central Railway shops; and an instructors' training course is in operation. A unit trade school is in operation at Hattiesburg, and another one is organized at Jackson. Meridian has a unit trade school for auto-mechanics and one for the building trades. Several evening classes are also in operation.

### STATE TRADE SCHOOL PROPOSED

In looking forward into the future, H. N. Seney, assistant supervisor, makes the following statement:—

"Vocational education in Mississippi is in its infancy. We are even now just scratching the surface, and a beginning has been made on a safe practical basis. As the movement gains in momentum it is hard to accurately predict where development will cease. It is a fact, because of changed conditions, that the various industries have ceased training young people for industrial life. This burden has been shifted to the public schools and the public schools, as organized, have failed to function in this matter because they are not designed to prepare our young people for industrial life. This condition must be met if our boys and girls are to have the advantages of education and training which we are duty bound to give them.

"How are we to meet this condition? It seems that a state trade school would offer a safe, sound, and logical solution. Such a school would not merely teach the trades for which there is a demand, but also such other subjects as will enable the student to develop into a manager or executive in the various industries.

"Such a school should be organized to work on a useful and productive basis, to operate under the same conditions that are obtained in the various trades and industries, whereby the ideals of honesty,



*Hand  
Composition*

# Type Composition—

## *The Great English Teacher*

**H**AND Composition is a major technical process of printing that is in itself educational. It affords opportunity for a practical application of all the knowledge gained regarding punctuation, spelling, capitalization, paragraphing and space arrangement. "Cold type" permits of no slighting in any of these essentials to perfect English.

All lessons may be composed in type and a product furnished each child daily. You owe it to the pupils and students to furnish them with this modern device of education.

The entire service resources of this company, including experienced educators, efficiency engineers, and selling organization are at your disposal.

Write to-day, to

F. K. PHILLIPS, *Manager*, EDUCATION DEPARTMENT

**AMERICAN TYPE FOUNDERS COMPANY**  
JERSEY CITY, NEW JERSEY

BOSTON, MASS.  
NEW YORK CITY  
PHILADELPHIA, PA.  
BALTIMORE, MD.  
RICHMOND, VA.

LOS ANGELES, CAL.

BUFFALO, N. Y.  
PITTSBURGH, PA.  
CLEVELAND, OHIO  
CINCINNATI, OHIO  
ATLANTA, GA.

CHICAGO, ILL.  
DETROIT, MICH.  
ST. LOUIS, MO.  
MILWAUKEE, WIS.  
MINNEAPOLIS, MINN.

KANSAS CITY, MO.  
DENVER, COLO.  
PORTLAND, ORE.  
SAN FRANCISCO, CAL.  
SPOKANE, WASH.

WINNIPEG, CANADA





## FIELD NOTES—(Continued)

initiative, thoroughness, promptness, and efficiency may be inculcated.

"In this school the various trades should be taught as well as business courses, including accounting, stenography and typewriting, home economics, millinery, dress designing, and other vocations for which there is a demand.

"The school would be organized along the lines indicated by the best commercial practice. The work of the various departments would be so arranged that the product of a given department can be utilized in another department, and the final product be such that it can be disposed of on the open market. As an example, suppose that we wish to manufacture and sell a small gasoline engine. The mechanical drawing department would furnish the various blueprints. The cabinet and pattern making departments would make the patterns; the foundry would make the castings; the forge shop would make the necessary forgings; the machine shop would machine the parts and assemble the engine; and the painting department would finish the work. The engine, now ready for the market would be sold. The business department would keep accurate account of costs in the various departments, keep the books of the institution, handle the correspondence, and sell the articles manufactured. The printing department would furnish the various printed matter used by the school and publish books, pamphlets, etc., for the state institutions.

"Another example: The home economics department would have charge of the dormitories, prepare and serve the meals for the school, conduct the laundry, make and repair clothing, etc., and in this way receive practical instruction and experience in housekeeping.

"These examples in a general way illustrate the method of operation. It should be borne in mind that there is but one purpose; namely, training, and this school would offer that training to the young people of Mississippi. The principles on which this school is based are not new. They have been tried out and proven time and again. Our children want and enjoy this type of education.

"This state trade school is coming; a beginning has already been made, which has proven the need for and the practicability of this type of education. It is estimated that about \$450,000 would be necessary to properly build and equip such a school with a capacity of two hundred students. As the school grows in size, additional buildings could be completely built by the pupils who were training in carpentry, masonry, plumbing, pipe fitting, painting, etc.

The cost of operation is estimated at around \$75,000 per year of twelve months.

"One of the great advantages of this school is that it would be nearly self sustaining. The estimated income from tuition, printing, cabinet work, castings, forgings, machinery, machine shop work, carpentry, masonry, tinsmithing, etc., with 200 pupils would be around \$30,000 per year at the beginning, and later on the production would naturally increase."

—F. T. SELBY.

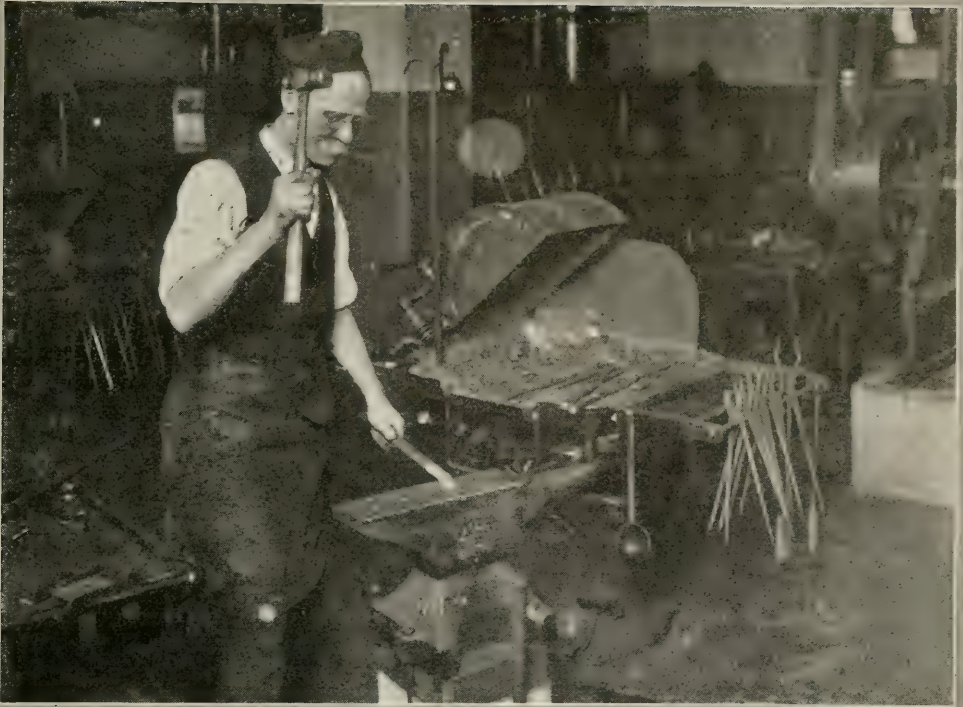
## AROUND NEW YORK

AT THE regular luncheon meeting of the Continuation School Teachers' Association, Magistrate W. Bruce Cobb pledged whole-souled support of the continuation schools by the judges charged with the enforcement of the compulsory attendance laws. The magistrate told the teachers that he had approached the problem with some skepticism, but that after careful inquiry as to what the continuation schools were trying to do, he had become convinced that they were a tremendous force for Americanization, and could be a much greater force in spreading an influence for law and order than would be possible for the magistrates. Judge Cobb emphasized the fact that the schools, the attendance bureau, and the magistrates must work in cooperation for the best interests of the children.

George H. Chatfield, assistant director of attendance, expressed the opinion that the schools and Attendance Bureau were especially fortunate in the type of men on the bench, who were responsible for the enforcement of the law, for the law, he said, "when administered by such men, is sure to result in justice to those concerned." Mr. Chatfield stated that much of the criticism of the schools had been the result of jail sentences, which it had been necessary for the judges to impose in extreme cases, but that this would be obviated by a bill now in the hands of Senator Knight, which will lay the same penalty upon the recalcitrant continuation pupil as upon the elementary school pupil. That is, they may be sent to a truant school.

Dr. Franklin J. Keller expressed the hearty appreciation which the teachers felt for the cooperation of the courts and the attendance bureau, and stated that without this substantial backing they would not have the pupils to teach. However, he pointed out that it was the ideal of every teacher to make the continuation schools so valuable and attractive in the lives of young workers that the service of neither the courts nor the attendance bureau would be necessary to bring the pupils to school.





## 56 YEARS AT THE FORGE

J. RICHARD LAMBIRTH, instructor of forging and metal work at the Massachusetts Institute of Technology, is the dean of forge workers, blacksmiths, and metal workers of America. He has spent 56 years of his life at the forge and anvil. For 35 years he has been the head of the laboratory of forging at Technology and in all that time has never missed a single regular class day. To see him at work instructing students as to the best way of shaping a red hot piece of iron or to make a weld is a revelation in quickness, dexterity, and skill. He uses Sturtevant Forges.

**B. F. STURTEVANT COMPANY**

Hyde Park

Boston, Massachusetts



**Sturtevant**  
REG. U.S. PAT. OFF.  
**PUTS AIR TO WORK**



## FIELD NOTES—(Continued)

### PRINTING TEACHERS' ASSOCIATION

About forty teachers of printing from New York and New Jersey attended the first regional meeting and dinner of the New York and New Jersey Chapter of the National Association of Printing Teachers held on Saturday, April 9, at Hotel Garfarone. J. C. Oswald, editor of "The American Printer," spoke on the work that was being done by the educational committee, and also on the need of apprentices. G. E. Parsil, director of vocational schools of Middlesex County, N. J., gave an instructive talk on "Teacher Training and Trade Analysis as Applied to Printing." An illustrated talk was given by F. A. Baker, Montclair, N. J., on "Linoleum Block Printing." Portfolios of printing specimens were distributed among the members. An address on the plan of the organization and its aims was given by D. Daniels, Newark, N. J.

The officers elected to serve the ensuing year are: J. E. Mansfield, New York, president; H. Burns, Newark, N. J., vice-president; A. H. Mathieson, Brooklyn, N. Y., treasurer; D. Daniels, Newark, N. J., secretary. The next meeting is to take place in June.

### A QUESTION OF HOURS

At the meeting of the executive committee of the Teachers' Interests Organization held at the Waldorf-Astoria, Thursday, April 14, the questions of long hours of service for vocational teachers was discussed. A delegation of shop teachers from the different vocational schools presented reasons why it is necessary for all classroom teachers to become interested in the campaign to have Dr. Straubenmuller and his associates, who are in charge of these schools, allow these vocational teachers to go home at 4 P. M. when their classes are dismissed. At present these men and women are compelled to remain one hour (until 5 P. M.) after school every day. These teachers are also compelled to teach during the month of July.

### DISCUSSION OF SCHOOL FINANCES

The Associated Teachers of Shopwork of this city acted as hosts to the School Craft Club on Saturday, April 23, at the Murray Hill Vocational School. President T. D. Poucher urges all shop teachers to avail themselves of the opportunity to participate in the Craft Club round table discussions.

Facts showing how urgent it is that legislation be secured to protect school financing were put before the Associated Teachers of Shopwork at their dinner at Hotel Pennsylvania, Saturday, April 16, by District Superintendent Edward Mandel and T. W. Metcalf, school editor of the Globe. Following the

addresses President Timothy Poucher, declared that the Association could be counted upon in the campaign to secure financial independence for boards of education in all cities of the state. Supt. Mandel told of the developments at Albany, and the certainty that next year legislation affecting the organization and administration of the schools would be passed. Education was the weakest of all functions, and needed the greatest legislative protection. He referred to many of the unfortunate results of dual control and made a forceful plea for united action.

Further facts showing the unfortunate financial conditions in the schools were presented by T. W. Metcalf, who showed how it was going to be necessary in 1922 to meet a larger deficit than in 1921, by a bond issue. Unless something were done this pyramiding of bond issues would create a situation that would threaten seriously the maintenance of the schools.

President Poucher pledged the aid of the teachers and briefly reviewed the work already done.

M. Samuel Stein of the Board of Education paid tribute to the work of the shop teachers, commending highly the courses conducted and the exhibit of their work now on display in the city.

The exhibit was also commended by Associate Superintendent Gustave Straubenmuller, who delivered a most inspiring address, emphasizing the importance of the "will to do." He predicted that in time the shop teacher would be an influence thru the schools instead of only on the older pupils who now come under their instruction. He commended particularly the success of the teachers in transmitting to their pupils the power to judge beauty and enjoy it.

Director Barney of the Hebrew Technical Institute reviewed the success of the graduates of the Institute, many of whom are in the corps of shop teachers.

—W. H. DOOLEY.

### FOREMANSHIP TRAINING CONFERENCE AT SPOKANE

THE Federal Board for Vocational Education is promoting foremanship training along a line of procedure uniquely its own. There is no longer any question in the minds of those who have given the subject serious thought that foremanship training is vocational education applied on the job. The problem that confronts most educators and industrial engineers is that of "putting over" to the foremen that which all agree should be given. Unless the trainer has been able to induce vigorous reaction among the foreman it is a question in the minds of





# New McGraw-Hill Books for Vocational Schools

French and Svensen—**MECHANICAL DRAWING  
FOR HIGH SCHOOLS—\$1.50**

This book grew out of the Ohio Survey of the teaching of mechanical drawing in high schools.

It is a complete textbook—developing instruction in mechanical drawing systematically and thoroughly. It is a complete problem book, too—providing sufficient problems for the needs of any two-year course.

Longfield— **SHEET METAL DRAFTING—\$2.25**

A textbook on the underlying principles of sheet metal pattern drafting. The arrangement and presentation of the material have been successfully tested by several years of practical application in the teaching of the subject.

Croft— **WIRING FOR LIGHT AND POWER—1921 Edition—\$3.00**  
This new edition meets the latest requirements of the N. E. L. A. code.

Moyer— **GASOLINE AUTOMOBILES—\$2.00**

A clear, brief and interesting presentation of the essential principles of automobile construction and operation. The book furnishes practical help to drivers who, when faced by ordinary operating troubles, want to know how to locate the cause and apply the remedy.

George— **ADVANCED SHOP DRAWING—\$1.60**

Emphasis is placed on drafting as applied to such special subjects as pictorial representation, patent office drawings, electrical drawing, piping layouts, structural drawing and sheet metal work.

Consoliver and Mitchell—  
**AUTOMOTIVE IGNITION  
SYSTEMS—\$2.50**

A thorough, systematic treatment of the ignition systems used on automobiles, trucks, tractors and airplanes.

## McGraw-Hill BOOK CO., Inc.

**Penn Terminal Building  
370 Seventh Ave., N. Y.**

### **FREE EXAMINATION COUPON**

**McGraw-Hill Book Co., Inc.  
370 Seventh Ave., New York**

You may send me on 10 days' approval

.....  
.....  
.....

I agree to pay for the book or return it, postpaid, within 10 days of receipt.

Signed .....

School .....

Official Position .....

Address .....

.....

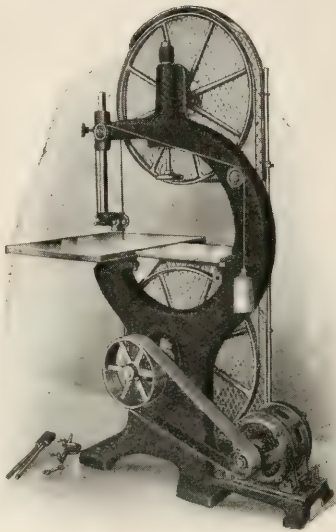
M. T. M. 6-1-21



# EQUIP WITH



## Woodworking Machinery



**FAMOUS**  
36 Inch Wheel Band Saw

**A** STANDARD machine for commercial shop and one of our many machines especially suited to manual training needs. Motor driven, well guarded, accurate, and durable.

Fourteen thousand of these splendid band saws now in use.

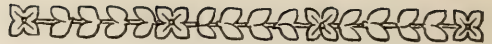
---

**Put your problems up to  
Our Engineering Division**

---

*Ask for Catalog No. 20*

**THE SIDNEY TOOL CO.**  
Sidney, Ohio



### FIELD NOTES—(Continued)

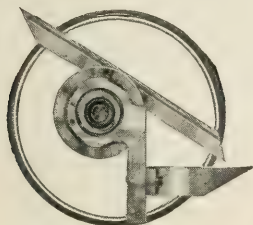
those representing the Federal Board whether the courses have functioned. The representatives of the Federal Board recognize that there is a danger that this new application of vocational education will "get off on the wrong foot" and meet with disfavor, which accounts for the modest progress being made.

Chas. R. Allen, formerly superintendent of instructor training with the U. S. Shipping Board Emergency Fleet Corporation, is doing the pioneering in this particular type of instruction. Recently at Niagara Falls he was conducting five such courses simultaneously. Frank Cushman, who has been Smith-Hughes Federal Agent over most of the territory of the United States, has been an understudy and associate of Mr. Allen and has conducted such courses with marked success. The start having been made, it remained for H. A. Tieman, Federal agent for the Western States, to arrange to have the state directors, state supervisors of trades and industries, and those connected with the state offices for vocational education who were doing teacher training work in trades and industries in the states of Oregon, Washington, Idaho, and Montana, meet in Spokane during the week following the Inland Empire Teachers Association to take part in a conference led by Mr. Cushman.

The purpose of the conference was to pass on to the men mentioned above, the philosophy, the psychology, and the benefits of the experiences of Mr. Allen and Mr. Cushman, so that these men might go into industry, conduct such courses successfully, and then in turn train others to do this work.

In conducting such a course with foremen the lecture method is not used. In fact the opposite method is used, which is that of getting the foremen to do the talking. The fundamental objective is to get them to thinking about their jobs. Of course there are many ways to get foremen to talk and there are many things they will talk about. So the whole value of the course depends upon the skill and tact of the trainer, who is acting in the capacity of a conference leader, to guide their line of thought along the particular route which leads to the ultimate objective. As each group of men has its own characteristics which are just as clear-cut as those any individual may have, so also must each group be "sold" in a manner corresponding to those characteristics. The leader may not know anything about the industry in which the men are working. And the less he pretends to know about said industry the less will he be pressed to act as judge for arguments which arise and which are of such vital

# 40 Years of Progress with Fine Tools



## *20 years ahead of wireless--*

In 1880, Starrett Tools were first made. Machinists had been using them for twenty years when Marconi flashed his first message through the air.

Because of their unvarying accuracy, Starrett Tools have had a big share in the development of the wireless. Machinists who build the great engines and dynamos for the big overseas wireless stations, have learned through constant use that Starrett Tools are always right.

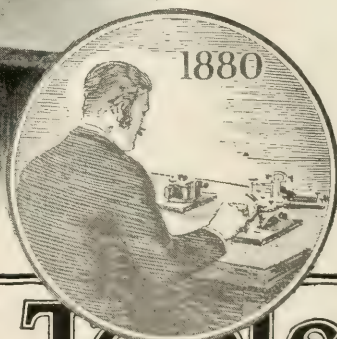
Forty years' experience in making fine tools and an unchanging standard of quality and precision—that's what you get when you buy a Starrett Tool.

The Starrett Catalog No. 22 "EF" shows 2100 fine tools. Write for a free copy.

## THE L. S. STARRETT COMPANY

*The World's Greatest Toolmakers*  
*Manufacturers of Hack Saws Unexcelled*  
ATHOL, MASS.

1920

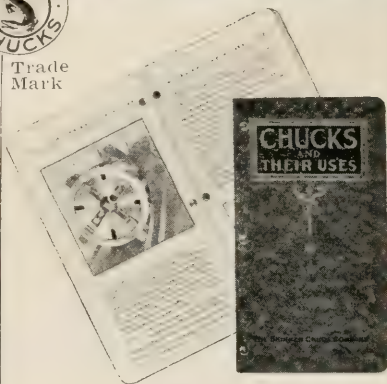


# Use Starrett Tools



42-125





## A Book of Information for Chuck Users

A book that shows the various types of chucks and their uses, together with suggestions as to the care of chucks, best methods of setting up and best way to handle certain operations should be useful to the student and vocational director.

We have just published such a book,

### "Chucks and Their Uses"

It contains information, based on more than thirty years' experience in building chucks.

We shall be glad to send to any interested person a copy of "Chucks and Their Uses."

We will also send to vocational directors a supply of these booklets for distribution among the students who may be able to make use of them.

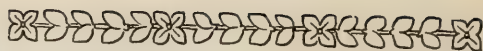
There is no obligation—no charge. Our compensation is the knowledge that we are assisting users to better understand the proper use of chucks.

*Send for your free copy now, giving full name and occupation*

**THE SKINNER CHUCK CO.**

NEW BRITAIN, CONN., U. S. A.

Established 1887



### FIELD NOTES—(Continued)

importance to the management that the leader must not speak his mind. As Mr. Cushman so aptly said, "Do not express an opinion about anything during the conference. It is the most dangerous act that may come up."

Blank forms are used which are to be filled out by the foremen and left in their hands. The discussion of the subjects is then started; the foremen will correct their own papers; and the leader will note, unassumingly, the degree of thought that has been manifested by the men. It is not the leader's objective to find out so much what the men are thinking about their jobs as it is to assure himself that they are thinking. A group of foremen, thinking about their jobs and discussing among themselves will usually, with careful leadership, arrive at the objective which is for the best interest of the men working under them, of the management, and of themselves.

This is the first conference of its kind that the Federal Board has authorized. Should the results justify it, others of a similar nature will be held in other divisions of the United States.

### THE SLOYD TRAINING ASSOCIATION

AT A MEETING of the alumni of the Sloyd Training School, Boston, recently, it was voted to form a corporation which will probably be known as "The Sloyd Association," with the intention that it co-operate with the Massachusetts Association for Occupational Therapy, a corporation which has recently been formed for the perpetuation of instruction in Occupational Therapy for the disabled in war and industry. The details of the corporation are left to the executive committee of the Alumni Association. It is probable that the two associations will form a school which will perpetuate the work so ably begun by Gustaf Larsson and continued by his successor, Josef Sandberg, and offer courses for workers in hospitals, special class teachers, and continuation school teachers, as well as shop teachers.

—E. C. EMERSON.

### NEW ENGLAND ITEMS

THE Boston Manual Training Club, the pioneer organization of its kind in New England, has decided to change its name to The Vocational Education Society of Boston, as an indication of the desire of its members to be regarded as "keeping up" with the scope of the work which they represent in so many directions.

The March 12th meeting of The Vocational Education Society was held at Healey's Hotel, Boston,





# The Teachers Tools

## Use only the best that money can buy

Textbooks which make possible better instruction—Make education definite and positive—Save time for both student and teacher—Which have been tried out and proved successful under varied conditions—

**These are the books to adopt for your students' use.**

**Tool Processes in Woodworking.** By Laughlin. For beginners, either grammar grade or high school classes. Price, 88 cents.

**Woodworking for Beginners.** By Griffith. A remarkably simple treatment of elementary woodworking for students in the seventh and eighth grades. Price, 80 cents.

**Essentials of Woodworking.** By Griffith. A textbook written especially for grammar and high school students. The standard textbook on elementary woodworking. Price, \$1.44.

**Woodwork for Secondary Schools.** By Griffith. The most complete and comprehensive textbook on secondary school woodworking ever published. Adapted for a full four-year course. Price, \$2.64.

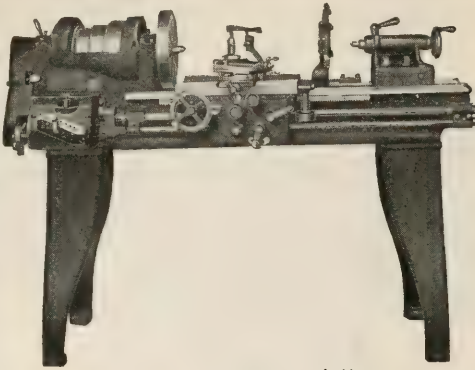
**Wood Pattern-Making.** By Purfield. A practical text for high school, trade school, technical school and engineering college students. Price, \$2.16.

**Elementary Machine Shop Practice.** By Palmateer. A practical text, well adapted for school and apprentice use. In many ways the best student text published on this subject. Price, \$1.50.

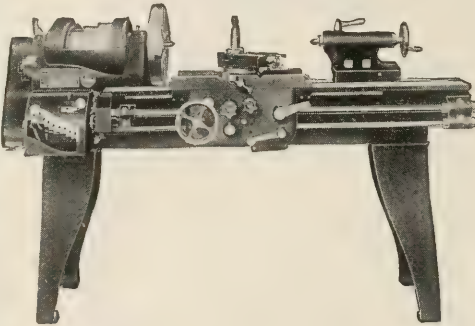
**Elementary Forge Practice.** By Harcourt. A textbook and shop manual adapted for use by students in high, vocational and technical schools. It presents a series of over forty projects, covering the fundamental operations. Price, \$1.50.

*Correspondence Invited*

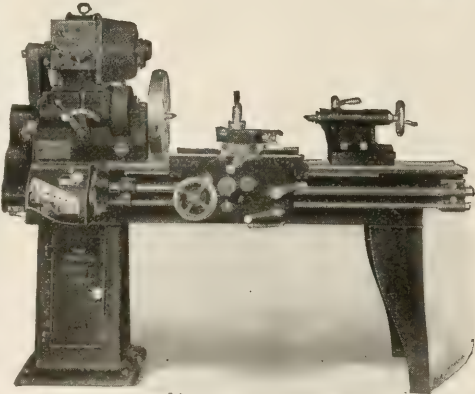
## The Manual Arts Press, Peoria, Illinois



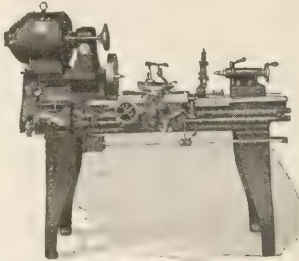
12-inch quick change lathe.



14-inch quick change lathe.



16-inch Motor driven geared head.



12-inch Motor driven lathe.

# MONARCH LATHES

from 10 to 30 inch swing

offers the ideal lathe for the manual training school. They are furnished in any style and with practically all attachments desired.

**MONARCH** lathes are low in price yet are as accurate as the highest priced lathes. By installing **MONARCH** lathes you can in many instances put in **two** **MONARCH** lathes for the same cost as **one** of the high priced lathes.

**MONARCH** lathes are in use in many factories and tool rooms with lathes costing almost twice as much doing just as much and as accurate work.

It is not necessary to pay a high price to secure a good engine lathe.

Let us send you our catalog and list of manual training schools using the Low Priced **MONARCH** lathes.

## THE MONARCH MACHINE TOOL CO.

103 Oak St., SIDNEY, OHIO

# Manual Training Magazine

JUNE, 1921

## VOCATIONAL EDUCATION IN THE PITTSBURGH SCHOOLS

FRANK M. LEAVITT

Associate Superintendent of Schools, Pittsburgh, Pa.

THE general principles covering the vocational education program in the Pittsburgh schools may be stated briefly as follows:

First, one of the associate superintendents has a general oversight of the vocational work and is, by virtue of his position, privileged to enlist the sympathy and co-operation of any part of the school system which may contribute, in any way, to the vocational education and guidance of any of the pupils.

Second, it is recognized that vocational education is not "vocational" unless it is taken by an individual who will make specific vocational use of the information or training secured. That is to say, machine shop work, however efficiently it may be given, is not vocational when taken only by students who are on their way to professional training in the University, or by those who "like it" and find that it happens to fit into their schedule for a semester or two.

Third, it is recognized that genuine vocational education is essentially an adult proposition and cannot, therefore, be given completely in any school. The most effective work in this field that can be done by the public schools is to develop vocational intelligence and, thru preliminary vocational courses, to make the young person a permanent and interested student of his chosen occupation. The school must determine, and must inform the pupil, where the peculiar work of the school ends and where the training

within the industry itself begins. The school may even furnish supplementary training for those who have passed into the industry, and *must* do so in the case of those of continuation school age.

Fourth, it is recognized that the financial and social conditions in a large city inevitably work in such a way as to form rather distinct classes, hateful as class distinctions may be in a democracy, and that the determining influence in any program of vocational education must be the character and status of the pupils by whom the courses are taken.

Finally, it is agreed that, in any type of vocational education, there are three distinct parts or phases. For convenience we may designate them as A, B and C, as follows:

(A) There is the training in the processes or technique of the occupation, together with the scientific knowledge closely related thereto.

(B) There is the imparting of such general information about the occupation as will show the young worker its relation to the work of the world and make him fairly intelligent as to its internal subdivisions and organization.

(C) There is the development of those desirable motives and ideals which are needed to hold the young worker steadfast to his duties during the long and sometimes disagreeable years of apprenticeship.

In the light of the above, it should be apparent that the Pittsburgh plan of



vocational education may readily be stated in terms of the different types of pupils for which it is intended, different in their abilities and ambitions, different in their financial and social backing, different in their vocational opportunities. Let us describe roughly the more important of these groups, so far as vocational education is concerned.

There are, unfortunately, individuals who can gain little or nothing by remaining in school beyond the end of the compulsory school period because of their marked mental inferiority. Our psychological clinic examines all such cases referred to it and it is not uncommon for the director to advise that the only education which the individual is competent to receive is that which may come from working at some relatively low-grade manual occupation. The stimulus of actual contact with the work-a-day world is more potent than a continuance of school influences. Such children can easily be placed, as a rule, and we care for them, if necessary, thru the placement office of the Vocational Guidance Department.

All retardation is not to be accounted for, however, by lack of mental alertness and it is possible to provide school experiences for backward children that are quite as stimulating as is work in the industries. We have one school with a prevocational department where just such cases are treated. This type of school has been developed more completely and more satisfactorily in some other cities but we have at least under way an example which is demonstrating the need and the efficacy of prevocational departments. The time is divided about equally between book subjects and shopwork, both of which are treated as practically as possible, and productive work is emphasized.

In every city, there are those who leave

school as early as the law permits. These are either tired of school, financially handicapped, or the victims of parents who consider their children to be "assets" upon which they should realize as early as possible. For the service of all of these children we have, under an excellent state law, the Continuation School in which the pupils must spend eight hours a week. The Continuation School can not give *all three* phases of vocational education, the A, B and C above mentioned, *to all of its pupils*, but it can and does give them all to a considerable number of the children. The A is possible for the minority only. The courses offered include cabinet making, sheet-metal work, electrical work, printing, dressmaking, cooking, millinery, drawing, industrial design and office practice. The Continuation School can and does give the B, above mentioned, to a slightly larger number and the C is the major consideration for most of those who stay for any considerable time within its organization. The so-called academic work contributes to both B and C and is given under the subject headings, English, mathematics and social science. Not only do the Continuation School pupils have the benefit of the instruction given, but they have the services of the Vocational Guidance Department, first when they enter the school, then at any time when they change their positions, and finally when they reach sixteen and leave the school altogether.

One important feature of the vocational guidance work with continuation school pupils is the development of a week-about plan of part-time education. Special classes have been formed in three schools, a junior high, a senior high and the boys' industrial school, to which the Department may direct any child who may be persuaded to take half-time instead of full time work.

Then there are those children who, while desiring to stay in school two or three years beyond the compulsory sixth grade, wish to have an industrial rather than an academic education. For these children, if they are boys, we have the Ralston Industrial School and a so-called "Smith-Hughes" Department in the Junior High School. Both of these are organized in conformity with the state and Federal laws for vocational education and offer the usual variety of subjects, including cabinet making, sheet-metal work, machine shop practice, various types of electrical work, drafting and printing. We have little vocational education for girls excepting that which is given in the home economics and commercial departments of the elementary, continuation, junior and senior high schools where, however, individual girls find opportunity to secure excellent preparation for occupational life. The reason for this seems to be that Pittsburgh offers little opportunity for girls to work excepting in the offices and stores, and in a few low-grade factory position for which technical training is unnecessary.

Next, there is the group that enters high school with the intention of staying two or more years but without any thought of going on to higher educational institutions. For these we have four-year and two-year commercial courses and a special two-year Business High School. We have a special course in retail selling for juniors and seniors which includes Saturday work in co-operating department stores. We have the usual high school shopwork courses which we are attempting to make a little more "vocational" thru the promotion of productive work and by means of the vocational counseling which is now provided by the Vocational Guidance Department.

We have organized also a high school apprenticeship course. While much in-

telligent effort has been devoted to promoting this course, its future is by no means assured. Such a course offers excellent opportunities to the high school boy but it requires an inordinate amount of attention to keep it in operation. According to our prospectus the school offers:

1. A high school education.
2. A skilled trade.
3. Self support.
4. Preparation (if desired) for the School of Engineering of the University of Pittsburgh.

The course is organized on a five year basis. The first ten months are spent entirely in the school (the regular freshman year), the fifth year is spent entirely in the industry, and the three intervening years are spent in both school and shop on a cooperative plan either week-about or on a half-day basis. At present we are having more applicants for the course than we can accommodate with part-time apprenticeship positions.

Finally, there are the evening school pupils, a group more diversified than any other which a school system has to serve. I shall not attempt to describe the work of these evening schools because I believe that there is nothing peculiar about it,—nothing that can not be found in many other cities. One feature, however, is deserving of special mention, namely, the apprenticeship classes. Apprentices in the building trades are required by their respective unions to attend evening classes, four hours a week. The unions organize the classes, enforce attendance, and cooperate with the Board of Education in providing suitable teachers. They have also assisted greatly in providing equipment and supplies. This winter we have, in these apprenticeship classes, approximately 275 apprentices from the electrical, carpentering, plumbing and bricklaying trades.

No vocational education program is complete or even approximately effective without some measure of vocational guidance. Perhaps the most important phase of vocational education in the Pittsburgh Schools is to be found in this field. Our conception of the meaning of vocational guidance is that there should be intelligent and sympathetic cooperation between the schools and all of the occupations into which we allow the young people to enter as they leave the care of the schools. In most school systems, speaking generally, vocational guidance means *information*. In Pittsburgh it means, pre-eminently, *service*—service to the young people in the selection of school programs and in entering into occupational life; service to the employers who receive our school product, at first or second hand; service to the schools which, thru this work, are kept sensitive to the needs of the local community.

Unlike most other cities, especial attention is given to placement, not because placement in itself is so important, but because it puts us in possession of a vast amount of information which can be gained in no other way and which is absolutely essential if we are to give the service to which reference has been made. In the development of placement work, we have been fortunate in having the cooperation and the generous financial assistance of the Federal Government, thru the Junior Division of the U. S. Employment Service.

While the Government prescribes standards and recommends methods, the selection of all officers and the direction of all guidance and placement work, conducted under this joint support, is vested in the public schools.

The complete organization in Pittsburgh includes, in addition to the director, one counselor in each junior and

senior high school, two placement officers in connection with the Continuation School and six placement and field officers for the service of those between sixteen and twenty-one years of age. One field secretary is devoting his entire time to a study of high school drop-outs.

The placement office is conducted like any well organized employment bureau. It receives, interviews, classifies and registers applicants for positions. It receives orders from employers in search of employees and sends out to such employers weekly bulletins in which are listed a considerable number of applicants. The bulletin gives information to the employers regarding the sex, age, education and experience of the applicants, together with what they expect to receive in wages or salary. Appearing, as it does, weekly, this bulletin gives some indication of the conditions of the junior labor market, especially as to supply and demand.

The most significant thing about the Pittsburgh Public School Employment Service, as it is called, is that the office is in close touch with the public schools, particularly with the high schools. We believe in the principle of centralized placement. It should be evident that, because of this fact, we can supply the employers with information regarding applicants that is much more accurate and significant than can be supplied by any other agency, even including the expert employment managers of the employers themselves.

The most recent development with respect to the collection of this pertinent information, for use by the placement office, is to be found in the work of the Department of Research and Measurement. Under the direction of this department, a cumulative record card is now in use which accompanies the pupil from the elementary to the high school



and, if he leaves school, is sent automatically to the placement office. The information as shown on the card is such as any intelligent employer would be extremely glad to have.

As stated at the beginning of this paper, the most significant thing about the vocational education program of the Pittsburgh Schools is that we have not omitted, in our plans, any considerable group of our young people. I do not mean to say that we are serving them all as completely as we ought, but I do claim that we have their problems in mind

and on our conscience. After all, one cannot expect perfection in the public school system or in any other human institution. The essential thing is that we are making reasonable progress in the right direction.

On the whole, I believe that it is well within the truth to say that our work in vocational education, guidance and placement is a genuine progressive attempt to render the public schools a vital factor in the social and economic development of the community which they serve.

## THE HOME SHOP AS AN EXTENSION OF SCHOOL WORK

WILLIAM J. ROGERS

Teacher of Manual Training, Public Schools, Scranton, Pa.

ONE of the problems that the manual arts teacher has to deal with, in increasing frequency, is the equipment and use of the home shop as an extension of school work. Many factors are bringing this about: the Boy Scout Movement, the high cost of labor in repairs about the home, and the desire of the people in the home for simple articles of woodwork, made prohibitive by the high labor cost of manufacture.

The probability of a home shop will vary inversely with the size of the community. In a large city, the people living with very little extra space, and the many diversions of the street and the movie houses, the home shop is almost prohibitive. Still there are a few to be found in a large city. In the moderate and small-size cities and country towns, with a smaller number of outside diversions and interests appealing to the boy, there will be a large number of home shops. Usually the first question asked the teacher is "What sort of tools are best for use around home." The answer to this requires more than a snap judg-

ment. The tools found in a manual training shop are not usually the best for a home kit. Each tool must give the maximum of service, be of good quality, and stand up under adverse conditions of care, as many home shops are in the cellar or attic.

The tools must not only be suitable for the boy now, but be an efficient kit of tools for the boy when he becomes a man.

The following list has been recommended and has proven satisfactory on many occasions during the past few years:—

The plane may be a large smooth or a small jack wood-bottom plane. The ideal plane for the home kit is a wood-bottom jack, 12" long, with 1¾" cutter. The nearest on the market that I know is the Bailey Junior jack plane, 12" long, 1¾" cutter all-iron plane.

Crosscut-saw, 20" panel, 9 or 10 points.

Rip-saw, 22" 7 or 8 points.

Square, small framing steel, 12" x 1½" body, 8" x 1" tongue.

Hammer, 12 oz. adze eye, bell face, claw.

Screwdriver, 4" blade.

Rule, 2 foot 4 fold, brass bound.

The above is the minimum kit, and should be in every home, the following are purchased as required:—

Chisels,  $\frac{3}{8}$ ",  $\frac{3}{4}$ "  $1\frac{1}{4}$ ", socket firmer, leather-tipped handles.

Mallet, wood,  $2\frac{1}{2}$ " face.

Marking gage, slide mortise.

Brace, 8" sweep, ratchet.

Bits, auger,  $\frac{1}{4}$ ",  $\frac{3}{8}$ ",  $\frac{1}{2}$ ",  $\frac{3}{4}$ ", 1", assorted gimlet, countersink and screwdriver bits.

Dividers, 6" wing.

Spokeshave.

Pliers, electrician's side cutting.

Carborundum, combination oilstone and oil-can.

The workbench should be home made, 30 or 32" high, not more than 6 ft. long, with a very simple vise. The working top to be made of lumber 2" thick and about 12" wide.

The teacher should very strongly recommend that the boy have at least one book on tool operations, such as Griffith's, "Essentials of Woodworking" or King's, "Elements of Woodwork." This book should be kept with the tools, and used when the boy has any difficulty or has forgotten the directions of the teacher.

Every school shop should have a small library of books containing a great variety of projects, suitable for the homes in the city or the small towns. The boy can select the project he wishes to make, with the advice of the teacher, who sees to it that the project is well within the ability of the boy. This is to prevent any large waste of material or energy. The boy then makes a large working drawing, full or half size, makes the selection of wood and a list of materials required to complete the project. All this should be

checked by the teacher before the boy begins work.

There is no good reason for keeping the country boy and the boy in the small towns to projects of the hog-trough, chicken-feeder type. He should be encouraged to make any project in carpentry or cabinet-making that he has use for, and that is within his ability.

In beginning this work, the teacher should strongly guard the boy from excess of zeal in attempting projects beyond his ability or that require an excessive amount of time to complete. The danger here is that the boy may kill his interest in a pleasant avocation or may consider himself a failure, when he only lacked the physical development and experience necessary for complete success.

All projects made in the home shop, when made by the boy himself under this method, may and should be given the same credit as regular school work, and it must be counted in the regular work. Where the teacher is able to get around and inspect such work, all repairs about the home should be given the same credit and counted in the regular school work. All boys that are members of the Boy Scouts may earn merit badges thru work in the home shop.

All of the work is simply a preparation for one of the most pleasing and profitable avocations that a man can have. The fulfillment of his constructive instincts in articles he desires and can use, or the direct introduction to one of the skilled trades.

*The instructor that can withstand the popular demand for quick and inadequate training, for the turning of sharp corners and the introduction of short cuts in education a la carte, and that can root himself in the realization that it is not altogether what a man does but also the way in which he does it that counts, is eventually a servant of his race. The work of the hand depends upon the vision of an ideal; the success of a vocation upon the perfection of its products.*

—CHRISTIAN SCIENCE MONITOR.

# CRAFTS AND EDUCATION IN BRITISH PRISONERS-OF-WAR CAMPS

JAMES T. BAILY

Manual Training Master, Central School  
Cheltenham, England

*We have solicited this brief article from Mr. Baily, first, because it gives a glimpse of the inside of the largest British camp for interned civilians during the world war; second, because its author, who was the Government industrial superintendent of this camp, is a manual training director and lecturer on building trades subjects; third, because of the good craftsmanship apparent in the objects made in this camp; and, fourth, because Mr. Baily is personally known to a number of our readers, he having visited the United States in 1907-8 as a member of the Mosley Commission of Teachers. He is known to others thru his books.*



JAMES T. BAILY

Mr. Baily was educated at Lincoln. From 1897 to 1911 he was the chief instructor in manual training at St. Albans in Hertfordshire, and from 1911 to 1915 he was doing similar work and training teachers at Kent. He has taught in the summer schools at Brighton and Yarmouth, and for several years was the secretary of the National Association of Manual Training Teachers. From 1914 to 1919 he was engaged in war work—first among the Belgian Refugees as they landed at Kent, and later with the Friends Emergency and War Victims Relief Committee, organizing in London relief goods for despatch to French, Belgian, Servian and Montenegrin refugees. Then, he became industrial adviser to the Society of Friends' work among prisoners of war until appointed by the Government to take charge of the industrial work at Knockaloe on the Isle of Man. After completing his work with the interned men he was sent over into Central Europe with the Friends' Emergency and War Victims' Relief Committee. Last fall he returned to England and began his present work at Cheltenham.

—THE EDITORS.

CRAFTSMANSHIP and educational work figured prominently in the detention camps for prisoners of war situated in the British Isles during the years, 1914 to 1919.

The decision of the British Government after the outbreak of the war to intern most of the civilians of enemy alien birth living in Great Britain resulted in the formation of several detention camps. The largest of these was situated in the Isle of Man;\* one at Douglas for 3,000 men and the other at Knockaloe for 23,000 men. The first internments were effected towards the end of 1914, and Knockaloe Camp was

not evacuated until October 1919. For purposes of administration, Knockaloe Camp was divided into four sub-camps, each of which was sub-divided into barbed wire compounds to hold 1,000 men. Each of these compounds was provided with wooden huts in which the interned ate and slept, a cook house,

\*The Isle of Man (Manxland) is situated almost in the middle of the Irish Sea to the west of the North of England and having Scotland to the north and Ireland to the West. The Isle is about 30 miles long by 11 miles across and is a favourite holiday resort during the summer months. It was the scene of most of the story "Peveril of the Peak" by Sir Walter Scott, and is the home of Sir Hall-Caine.



kitchen, washing places, and a large hall for recreation, schools, libraries and workshop purposes. These civilian internees were among the most unfortunate of the victims of a state of war. A very large number of them came to England during infancy and in many cases knew

To check this pitiable condition the British Government acted favorably on the requests of certain benevolent agencies to organize activities and occupations for the interned, and so the Society of Friends, The Markel Relief Agency, and the American Y. M. C. A. started opera-

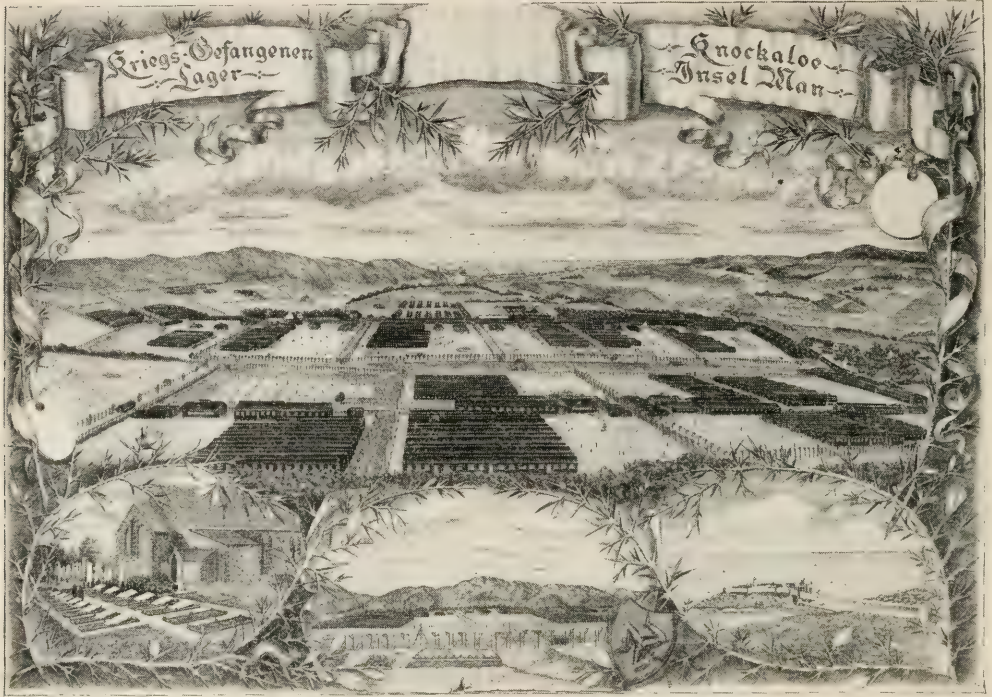


FIG. 1. STEEL ENGRAVING MADE AT CAMP KNOCKALOE

no other language than English. They had generally married English-born wives and their children, born in England, became, by the law, British subjects. For the majority, internment meant almost the loss of all things—business, employment, savings, home, separation from wife and family, the latter often having a hard struggle for existence. These facts together with the confinement behind barbed wire, contributed to mental and physical strength becoming severely strained; for some the strain proved too great and they became mentally deranged and physically wrecked.

tions before the end of 1914 with the object of mitigating the deplorable conditions of the interned. Thru their united efforts the camps were soon supplied with libraries, schools, orchestras, theatres, gymnasiums, relief agency, workshops, gardens, etc.; and various committees, chosen by the internees from among themselves, were soon organizing and administering the work.

During the years 1915 to 1918 competitive exhibitions of industries and gardening were held and caused much enthusiastic interest. In each of the compounds there was at least one work-

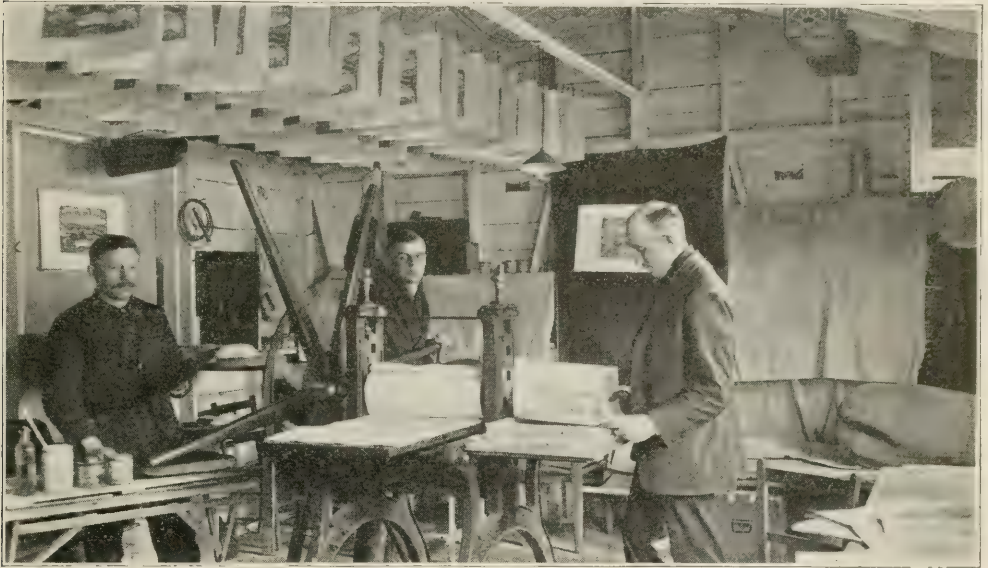


FIG. 2. PRESS WHERE STEEL ENGRAVINGS WERE PRINTED

shop in which various crafts were plied; it was common to find the woodworker and the tinsmith, the tailor and the bookmaker, the watchmaker and the painter, together with others, working under the same roof. These industrial activities of the camp at Knockaloe were administered by four industrial committees, one to each of the sub-camps. The

committees were constituted with a chairman, secretary, and accountant, together with the manager of each respective compound workshop; they met at least weekly to receive from the industrial superintendent orders for goods to be made, and to allocate such orders to different groups of workers; also to receive and pass on to the industrial



FIG. 3. CARVED BONE WORK



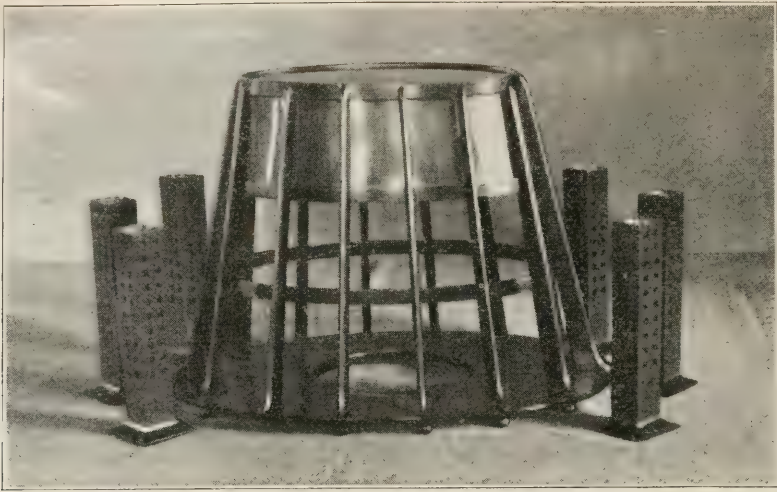


FIG. 4. TABLE CENTER PIECE AND FLOWER VASES

superintendent requisitions for materials and tools, and to deliver finished articles.

Many of the workers were not only among the most skilled of craftsmen but were most ingenious in improvising tools

and machines—necessity was never more truly the mother of invention than here—possibly some of the lathes were the most weird and wonderful coming under this heading. Printing and lithography



FIG. 5. CENTER PIECE IN USE



had a very useful place in the camp industrial life, supplying the newspaper *The Camp Echo*, posters and programs of concerts and theatres, and the requisites for schools, libraries, etc.

In Camp 2 some fine work was executed in steel plate engraving and printing. Fig. 1 is reproduced from a print of a steel engraving, measuring 15"x11" which is a true picture of the camp at Knockaloe, I. O. Man.

The general view is taken from a hill on the south side of the camp which hill is shown in the lower centre inset; to the right of this is a small view of the entrance to Peel harbour and the ruins of Peel Castle and St. German's Cathedral situated on Patrick Isle two miles north of the camp.

The inset in the lefthand lower corner shows some of the 137 graves of deceased prisoners of war interned in the neighboring churchyard of Patrick. The thorny plant used as a decorative element is the golden gorse which abounds everywhere in the island, and flowers with such persistent profusion that there is a Manx saying that "When the gorse is not in bloom, kissing is out of fashion." The Manx coat of arms is represented in

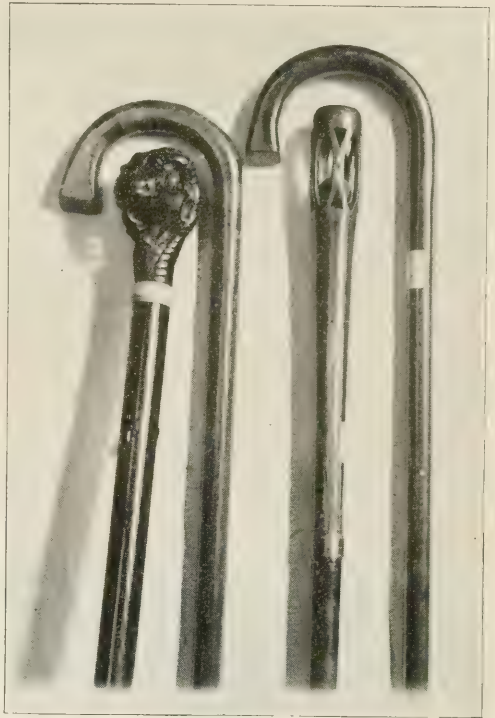


FIG. 6. WALKING STICKS MADE BY PRISONERS.

three legs of man and the tailless cat, peculiar to the island, is also shown. The central space in the scroll was provided for the individual purchaser to have his name inscribed thereon and the two discs on either side were to receive the man's camp number and his registration number; these discs are representations of the brass number tallies issued to each internee by which "head counts" were tallied at least once each day.

Fig. 2 is a photograph of the press where the steel engravings were printed. The views of the camp are here shown being printed. Note the impressions suspended from the roof to dry.

Fig. 3 shows carved bone work done by a gifted artist. Vases, paperknives, serviette rings, pin cushions, medallions, pin boxes, etc., were made from meat bones collected, boiled and bleached, and

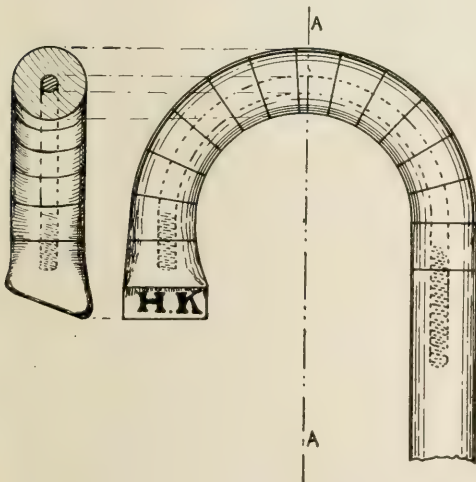


FIG. 7

then worked with short carving chisels, gravers and files.

The center piece for a table shown in Fig. 4 is quite unusual. The lower part holds a bowl of flowers and the upper part contains an electric light for use at night. This is shown in its proper setting, Fig. 5, in the dining room of a home in Northampton.

On either side of this center piece, Fig. 4, are small flower stands in polished wood. The sides of these have square perforations; a text-tube is inserted at the top to contain water and the blooms.

Fig. 6 shows four walking sticks made by prisoners-of-war. Reading from the



FIG. 9. ROSEWOOD STATIONERY CASE.

small segments threaded onto an iron core, one end of which was screwed into the stick, Fig. 7. The segment pieces were usually alternately walnut and mahogany or walnut and ebony, and the purchaser's initials were inlaid in the end of the crook.



FIG. 8. DESK AND DESK FURNITURE.

left, the top of the first stick is made of ebony and carved to represent a monkey's head gripped in a large bird claw. The white band below is of turned bone.

The two crooked sticks are examples of quantities made in ebony or dark walnut. The crook was built up of

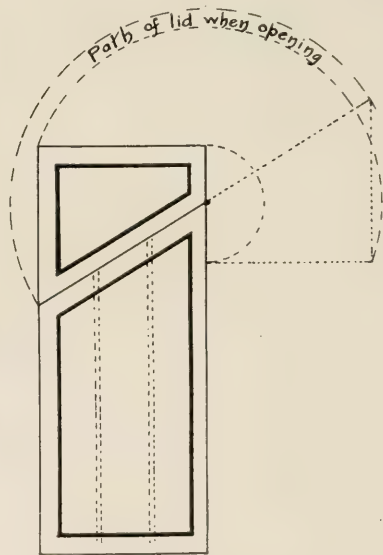


FIG. 10.

The third stick, Fig. 6, was usually made of either walnut or mahogany,

the top being ingeniously perforated so that one or more ball-shaped pieces remained in the cavity.

The roll-top desk shown in Fig. 8 was of fumed and polished oak. The letter balance on the top of the desk was partly made from "bully" beef tins, and painted with aluminum paint. The inkstand, bull-dog paper weight, pictures and frames and the coir door mat were all made in the camp.

The stationery case, Fig. 9, was made of polished rosewood and decorated with an inlay pattern and linings cut from bone. The rectangular form is cut thru obliquely, thereby forming a lid, Fig. 10, and the two parts hinged together.

Fig. 11 shows a table and two chairs for garden and veranda made of beech and enameled white.



FIG. 11. TABLE AND CHAIRS.



# THE RELATION OF FOREMAN TRAINING TO THE EDUCATIONAL PROBLEM OF A CITY

THOMAS E. JONES

Instructor in Foremanship, Cleveland, Ohio

THE modern industrial organization is made up of specialists who received their training either "on the job" or in institutions that cater directly to the demands of industry. This specialization is no doubt the result of our experience in the World War. At that time our ability as a nation was put to the test. Persons who gave evidence of superior skill in specific lines were singled out and placed where they could be of greater service. The wide awake manufacturer is now anxious to keep intact the type of organization that proved so efficient during the most tense period in history. In the process of adjustment to a peace basis the progressive employer becomes aware of the fact that the training of foremen has been overlooked.

The average foreman is the product of the old regime. He was appointed because he "knew the job." Like Topsy he "just grewed." Now, he realizes that he is surrounded by men who are "way up in certain things"; consequently, he gives the matter of training his most serious consideration.

The Smith-Hughes course in foreman training aims to help the foreman adapt himself to the new order of things. It shows him the relation of a foreman to the management, to his associates and to the men of his department. The principles of management as they apply to these three groups are discussed in class sessions.

Psychologically considered, men are creatures of habits, creatures of understanding, and creatures of feelings. The problems of human relationship are discussed from these three angles. Material problems in the course are made subordinate to these.

The work of converting men to the aforementioned belief is slow. Consequently the results of the course in foreman training are difficult to estimate. Higher executives sometimes enthusiastically declare that "production is coming up"—that "the men are more tractable." These remarks are pleasant to hear, but the actual results hoped for will not be accomplished until the men awakened to their newer responsibilities and their individual fitness will have fulfilled the aim they have set for themselves. That aim is none other than additional training along specific lines. In many Cleveland factories the managements are cooperating with the foremen in the organizing of classes in blueprint reading, mathematics, English and other subjects.

Experience in the organization of these factory classes proves conclusively that certain departures from conventional paths must be made in order to feel reasonably sure of success. The "boys" demand the following:—(1) The method of instruction must be different; (2) the content must be revised to meet their particular needs; and (3) the instructor must possess certain qualities not usually evident in the average teacher. The educational problem of a city is stated in these unwritten demands.

The method of instruction that appeals to the factory student is the informal type. Class attendance is purely voluntary: the worker goes to "school" because he likes to go. Consequently the method of instruction must be alluring. Principles must be "put across" in as practical a way as possible. Imagine grammar shorn of its terrors and still retaining its essence! Our "big boy" feels the need of what he once despised.

There must be a reconciliation, and the teacher by devious methods of presenting this still dreaded subject must bring about the reconciliation. The method must be different from any previously employed. We read of individual differences expressed in the schoolroom and of various methods of approaching the group. In a factory class these differences are very much felt, and it behooves the teacher to have more than one way of doing things.

A variety of methods suggests flexibility of content. In the average factory there is material enough for a course of study in every art and science that has contributed to civilization. Here is an opportunity for vocational and trade education. The time is ripe: the "boys" see the value of education in terms of dollars and cents.

These departures suggest a type of instructor extraordinary. He must possess a strong personality—a trite expression nowadays—containing a world of meaning. The instructor of a factory class should have his faith well grounded; he must have reasons for the "faith that is within him." Need he be any different from an instructor in the public schools? No. We all believe that our associates are in the happy possession of most of the elements of a strong personality. Then why a type of instructor extraordinary? Because of the problems that are presented. The teacher of a factory class must eventually see that in spite of lectures, textbooks, well directed super-

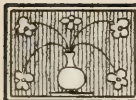
vision and all the factors designed to increase our conception of the word interest, we have somewhat fallen short of the goal. He is face to face with the evidence. The problems of a city and of a nation confront him. The evidence revealed calls forth the latent and extraordinary powers of the born teacher and he proves more than equal to the task.

The educational problem of a city is definitely stated in the lives of the persons who pursue its activities. Foreman training—a phase of industrial evangelism aims to awaken the foreman to a sense of added responsibilities. This is usually accomplished by the doing of things differently. The "boys" demand it. The educational problem stated in the industries of a city reverts itself to the schools of a city. In the solution of this great problem—educating all the children of all the people—we will do well to consider a revision of method and content. We think of two major divisions of public education—academic and industrial. When things are done differently there will be a fusion of these two groups. Dr. Frank E. Spaulding, speaking to the graduates of the Temple University, Philadelphia, in June, 1920, remarked, "The educational program under which we are now working is antiquated. It was founded 200 years ago. It was a noble program in its age, but its age is past."

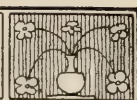
The most potent factor in the solution of this problem is the teacher; in truth he is a part of the problem—the very core.

*Seek the place where you can do your best thing and grow in it, and having chosen, aim at nothing short of mastery. Know your calling from the ground up; be an authority in it and not an echo; do not fear but cultivate originality; and do what you can to make industry a servant and not a master in the economic household.*

—DR. G. STANLEY HALL.



## EDITORIAL REVIEW FOR THE MONTH



### REPORT ON VOCATIONAL GUIDANCE

A COMMITTEE of the National Vocational Guidance Association, of which Dr. John M. Brewer of Harvard University is chairman, has prepared a report on the "Principles of Vocational Guidance" which may be looked upon as an authoritative statement on the subject. At least, it is the result of an extended study and discussion by the leaders in vocational guidance work in this country. Within the year since the committee was appointed, formulations of principles have been discussed in sessions of the various branch association meetings held in New York, Boston, Chicago, Cincinnati, Philadelphia, Kansas City, Minneapolis and San Francisco. As a result of these discussions suggestions for amendments were sent into the committee, after which a revised report was formulated which was printed as the report of the committee for the consideration of the convention at Atlantic City. Discussion at the convention at four separate meetings resulted in the comprehensive amendment of the report and its adoption by the National Association.

While the report is too long for publication in this column, we wish to quote a few paragraphs. The first paragraph makes clear the fact that the committee has kept away from that narrow type of thinking which makes vocational guidance merely steering a boy into one of a group of industrial occupations. It reads, "The term 'vocational' comprises all occupations recognized in the census list, including agricultural, industrial, commercial, homemaking, and professional callings."

The second paragraph recognizes voca-

tional guidance as merely one phase of the guidance needed by youth, and names the others as "connected with ethical life, health, recreation, citizenship and home life." It recognizes that all of these belong to education in the public schools. But as the vocational life occupies "one half of the waking time of active individuals" and because of the fact that "much of the world's dissension today in ethical political, international, and industrial affairs is based upon lack of knowledge regarding duties and responsibilities in occupational relationships," vocational guidance becomes very important.

The great aim of vocational guidance is summarized thus in paragraph 7: "All vocational guidance should help to fit the individual for vocational self-guidance, and also for the co-operative solution of the problems of occupational life."

Under the heading, "First Steps in Guidance" are the following paragraphs which provide a program for the elementary schools:

The home and school programs should include a combination of play, handwork, cooperative activity, and academic work—the whole being varied enough to represent life's demands, and concrete enough to secure an effective response and successful accomplishment by each individual child.

On the basis of individual differences revealed in the social life of the child, progress in school subjects, and in standardized tests, children should be classified into schoolroom groups. All group classifications should be regarded as tentative, being largely for the purpose of efficient learning and teaching.

For all children before the school-leaving age there should be provided a wide variety of try-out experiences in academic and aesthetic work, gardening, simple processes with tools and machines, elementary commercial experiences, and cooperative pupil activities. Such try-out experiences are for the purpose of teaching efficiency in every-day tasks, broadening the social and occupational out-



look of the children, and discovering to them and the teachers their interests and abilities.

Teachers of all subjects in schools and colleges should make a definite effort to show the relationships of their work to occupational problems just as they now relate them to other phases of life activity, such as the cultural, recreational, ethical, civic, and social.

Drifting thru school is a common evil in all educational systems. The life-career motive, whether temporary or permanent should be encouraged as one of the motives in the choice of a curriculum and of certain elective subjects within a curriculum.

The miscellaneous working experiences of children before and after school, on Saturdays, and in vacations should be studied and supervised. These experiences should be made to aid the child in understanding his environment and in discovering his vocational aptitudes and interests.

All forms of part-time education, such as the continuation school, co-operative courses, trade extension and trade preparatory courses, etc., should be provided in order that school and work may be brought into closer cooperation and that there may be more careful supervision of the child in employment.

If we add to these one paragraph dealing with the study of occupations we have the vital part of the report. This reads,

The class for the study of educational opportunities, common and local occupations, and the problems of the occupational world, should be carried on before the end of the compulsory school age. Such study should be provided for all students in junior high and high schools. It should give the pupil an acquaintance with the entire field of occupations, and a method of studying occupations wherewith he can meet future vocational problems in his life. The study of occupations should be offered in continuation schools, evening schools for adults and colleges.

The report is not as complete in reference to vocational guidance in vocational schools; tho some definite suggestions are given, such as selection of students on the basis of fitness, study of the "economic and sociological aspects of occupations, and short unit courses.

We recommend a thoughtful study of this report by teachers and supervisors in the field of manual arts and industrial education.

#### SCHOOL-COMMUNITY SCHOLARSHIPS

THE School Art League of New York is doing a work that ought to be suggestive for other cities. This organization is a group of community-minded people, both inside and outside the public school system, who wish to conserve the art talent of their city and utilize it for the advancement of art. It consists of educators, artists, museum directors, business men and influential women who have bound themselves together to cooperate with the great art and educational institutions of the city to discuss special talent among school children and then to develop it. Teachers in the high schools are on the look-out for talented pupils and when such are discovered they transfer them into special classes where they can have a larger amount of fundamental training. They are taught to do accurate work, are given much technical drill, more home study, note taking and are encouraged to visit museums.

During this period of special work in the high schools comes the chance to win a scholarship which gives them an opportunity for further study at Pratt Institute and the New York School of Art. These scholarships are provided, one-half by the school and the other half by the School Art League. The money provided by the school is obtained by the students who hold bazaars, fairs, school dances and vaudeville for the purpose. Every Christmas season hundreds of dollars are raised thru the sale of art objects made by the art students. And all this is done by them so that the more gifted among their number may be helped forward. At the present time there are more than twenty pupils on scholarships, and more than one hundred have been given the special courses of instruction in the schools.

## WESTERN ARTS ASSOCIATION CONVENTION

THE Western Arts Association held its annual meeting this year on May 3rd to 7th in the city of Peoria. Judging from the comments of many who attended the meeting, everybody who came was pleased with the city as a meeting place, with the hospitality of Peorians and with the fine weather. The only disappointment seemed to be in the fact that the attendance, especially of manual training and industrial teachers, was small in comparison with that of five or six years ago. This was accounted for by a delay in getting out the program and by the fact that the Vocational Educational Association of the Middle West made a stronger appeal this year to such teachers. It was also accounted for, in part, by the fact that the program itself placed special emphasis on art and industrial art problems. It was only the three round-table programs—manual training, printing and vocational education—details of which were not known to the members until they arrived at the convention, that made an especial appeal to most of the men. For the members who were interested in industrial art (and doubtless all ought to have been) the program was very satisfactory. The opening address of the president, Miss Ruth Raymond, struck a high keynote for the entire convention, and was an inspiration to all who heard it. She was followed in the evening by Dr. Ross Lee Finney of the University of Minnesota, who discussed "Social Objectives of Art Instruction" in a way that tied up the art teacher to the great forward march of civilization and made the particular teaching job of everyone in the audience look larger and more important—in fact made it appear as an essential element in the triumph of the high and worthy over the low and degrading. Dr. Finney was

followed by Dr. R. E. Hieronymus of the University of Illinois, who spoke on the same general theme, but more in detail. Another notable item for the art teachers was an address by Dudley Craft Watson of the Milwaukee Art Institute on the "Reconstruction of American Recreation thru Art."

## THE RIGHT TEACHING METHOD

FOR the manual training and industrial teachers, the first high point of the convention was reached on Thursday morning at the manual training round-table, of which Albert G. Bauersfeld of Chicago was chairman. First, Prof. Albert F. Siepert emphasized the need of teachers who (1) "can do what they attempt to teach," (2) "can teach others the things they know how to do," and (3) "can teach why the thing is done in that way." Then William J. Bogan used the Lane Technical High School—as at present and as planned for the future—to illustrate how vocational courses may and should become a part of the scheme of a high school. He believes that a trade department can be successful in a high school. "There is just one thing needed," said Mr. Bogan, "to bring this about," and that is that the principal of the school and his teachers shall believe in vocational education."

The third address was given by Dr. Charles A. Prosser on the "Psychology of Skill," tho that was not the title given on the program. He treated the audience as he would his class at the University, giving a clear and forceful exposition of the process of acquiring skill, using the methods of training dogs and dancing bears to illustrate the importance of pleasurable experience in the process, and the necessity for repetition. He commended the manual training teachers for emphasizing the importance of the correct first use of any tool. "If the thing

you are trying to teach is done right the first time, your difficulties are half over." But he contended that the trouble with the manual training teacher is that he doesn't train in production. On the other hand, the trouble with the trade school teacher is that in his effort to get production he lets the boys "bang around." "The manual training teacher should place more emphasis on production and the vocational teacher more on standards." Each should learn from the other.

The impression left by Dr. Prosser's address and the discussion which followed was, that so far as the ideal method of teaching is concerned, it is the same for both manual training and vocational edu-

cation. The differences between the two are not essentially differences of method of teaching but of amount of ground covered and sometimes of imposed limitations in the selection of subject-matter.

Method was again discussed on Friday at the vocational education round-table, presided over by Prof. George F. Buxton. Prof. R. W. Selvidge, or Dean Selvidge, as the Army men all call him, discussed "How to Teach a Trade." This proved to be an excellent practical application of the psychology expounded by Dr. Prosser.

At the closing session of the convention, Carl T. Cotter, director of manual training, Toledo, Ohio, was elected president, and Cincinnati was selected as the next meeting place of the Association.

## A POINT OF VIEW

### YEAST CAKES IN EDUCATION

EVERY year sees some new fad or fancy. Some, and more often than we think, have real meat. Many a fad has become a fashion and many an introspection has ended in an invention. For example take food fads. At one period we were told to eat meat, another to eat vegetables, another to eat bran and coarse foods, another to specialize on fruit. We often wonder when we read of these new ventures in eating how any one of past generations could have ever reached the historical four score and ten.

Now we are told to "vitaminize"—to get into our system vitamins. A short time ago some agricultural expert in Connecticut figured out that the reason Yale University no longer turned out winning teams was that the men at the training table were eating food grown on a Connecticut soil where the vitamins had been exhausted. He accounted for the brawn, and perhaps the brain, of

the West-coaster on the basis that the soil there was not exhausted of the mysterious bacteria which give that life impulse of strength and virility.

I have a friend who eats yeast cakes on his crackers and bread instead of cheese or butter. He is a seeker for vitamins. He says, "Eat three yeast cakes a day and keep old age away." You can well imagine how he looks. Men who eat bran, pre-digested biscuits, sweetened and crispy sawdust, and prepared breakfast virileness always look the part. "Tell me what you eat and I will tell you what you are."

Well! Yeast cakes are the latest and the vitaminous urge is the stock impulse. I do not know whether there is anything to yeast cakes but there is "something to vitamins." That is, there is some life giving force within us which makes for physical growth, alertness, strength, and sturdiness. When this force is declining in quality and quantity we move towards physical decay. What it is or where it is



or why it is we do not know. But whatever it is and wherever it is we recognize it in action. Some say that its possessor has "red blood," "pep," "punch," "action," "knocks a home run," and "strikes twelve." All recognize its absence by physical expression of lassitude, mental expressions of conservatism, and civic expressions of "let well enough alone."

Now, shall we put yeast cakes in education? Do the present crackers of "schooling" need some layer of something or other spread over them which will turn their partakers into something more virile, sturdy, and alert than we are told is possible in the present curriculum? Have we too much of a "toy dog" sort of educational feeding where boys and girls are fed puppy biscuits of prepared educational food which has been devitalized in their preparation? In terms which interest such fellows as us, are we paying too little attention to activity work, to play, to accomplishment, and over-emphasizing information gathering and retaining. In other words, is there anything in the gospel of hard work, or is schooling some process of learning by which we may learn how to avoid work? Of course, we all "send our children to school that they may never have to work as hard as we did." That is a natural impulse and has as a basis the best of intentions. But can we "arrive" by being carried on the shoulders of book education?

A supposedly intelligent school superintendent came into my office the other day with this statement: "I have a boy thirteen years of age who does well with his books but he wants to elect manual training and drawing. I am wondering whether it is wise for him to take this work. Will it count towards his college entrance? What harm can it do him? Of course, there is nothing to this work

that amounts to anything. Will it put him back so he can never catch up? What can I do to get him out of the notion?"

And this in the year A. D. 1921! My reply was substantially this: "Tell me about him. Has he good health? Does he sleep well, eat well, think well? Can he swim, play, and laugh? Does he ride astride a hobby horse, belong to the Boy Scouts, camp out, go hiking, and does he act like a boy and want to be treated as a man?"

The reply was: "*No, I should say not.* He is not very strong. He is not allowed to go camping. Hikes tire him. He does not live near the water so he cannot swim, and he is far from being like an irresponsible kid. But he has excellent marks in school."

"Great Scott, man," I said, "You are having him go to school so much that he is missing an education. Where is his sense training, his organic education, his training for capacity, his contact with life, his knowledge of the world of facts which hit the eye, the ear, the hand, and the spirit? I wish your old school report card had a place for marking such items as initiative, action, play, laughing, snap, health, hiking, flying kites, using tools, measuring distance by eye, selling newspapers, raising chickens, swimming, spending money wisely, savings account, money earned, responsibility assumed, home runs at the bat, boat building, trimming lawns, wireless, getting subscriptions, naming auto parts, and making 'automobiles' out of second hand parts."

I opened the flood gates and relieved the pressure on my dam of thought. "Take your dry crackers of book information, of memorized records of what others have done, your impossible carpet laying problems in arithmetic, your dates of reigning kings, your boundary lines of states, your split infinitives, your conjuga-

tions, your paraphrases, your thirteen-seventeenths of an inch, your capital of Kamchatka, your names of bones of the body—take these things out of my sight. Not once did you brag of your boys health, his eyesight, his hearing, his strength of arm, his delicacy of hand tough, his smiling disposition, his love for out-of-doors, his ability to work, his sense of responsibility, his spirit of play, his team work; not once did you say anything except “he has good marks.” The world will ask him what he can do, and he shows it a diploma. The world asks for sturdy adolescence and he shows it a weak body. The world asks for buoyancy of spirit he hands it a sickly and smug smile as he murmurs the words ‘I get good marks.’ I ask for a living thing and you hand me a parasitic organism.”

And then after he had gone I wondered what made Abraham Lincoln, J. J. Hill, Frank Vanderlip, Roosevelt, Carnegie, Edison, Burroughs, Cleveland, Whitman, Burbank, and other men of action in finance, government and letters. Did they all get “good marks?” Did log cabins, newspaper selling on trains, farms, struggle, out-of-doors and *work* (just plain ordinary work) have anything to do with their arrival at the terminal? Will the school alone educate the present-day boy? Or must it be a new type of school? Or is education gained, not only thru schooling, but also thru errands, responsibilities, earning and spending money, doing chores, collecting stamps, swapping knives, making boats, wood crafts, fishing, and making things?

If three yeast cakes can put life into a devitalized body, what will be the proportionate amount of leavening necessary to vitalize education? I have whitewashed (on school paper) walls, laid carpets, loaded freight cars, travelled every large river, walked around every

state, sailed every sea, climbed all peaks, visited every country, fought every battle, and died the death of a school hero. Thank fortune I had really to whitewash the horse stalls, beat carpets, load a grocery wagon, row a boat, walk to school, work in a shop, climb to an old fashioned attic, and lived to tell the tale.

I suppose the combination of books and work turned the trick. I had the yeast cakes at home, in the store, at the barn, and in the garden. The school served the crackers.

Nowadays the schools serve crackers as usual but spread yeast cakes on them for two periods a week. Fortunately for the boys they do a little spreading of vitamins on their own account as they play ball (and hooky), see the circus come into town, go swimming (President Harding has revived the old swimming hole sentiment), and learn geography of the South Seas at the movies.

The point I wish to make is that so many people are like that school superintendent who thinks that books constitute education, and that activity work which calls forth team play, hand expression, judgment, responsibility, initiative and action is nothing but a disrespectable side show to the main tent.

The Boy Scout movement is becoming the private school *education* of the American boy and the public school is the *schooling* process. This Scout movement has put the East of a rising hope of educational reform into the *yeast* of education. It will be a great thing for schools and hence for education when they join forces—when geography is motivated by hikes, civics is expressed in duties, ethics is projected into action and manual arts functions with adolescent youth. Then we will have yeast cakes in education.

—AUTHUR DEAN.

## WASHINGTON CORRESPONDENCE

### NEW LEGISLATION IN PROSPECT

**P**ROGNOSTICATIONS concerning federal legislation on education have been upset somewhat by recent events here in Washington. It will be recalled that during the presidential campaign last summer the republican candidate declared his belief in the urgent need for the creation of a Department of Public Welfare, which might coordinate a number of activities now scattered about among the government departments, and provide the means for dealing more effectively with certain vital national problems. On the surface, little more was said or done concerning the matter, and, so far as the public was aware, it had been forgotten.

Since the opening of the present special session of Congress, however, the subject has been revived, and a number of interesting things have happened. Chief among these, of interest to educators, is the announcement of a definite, or at least tentative, administration policy with reference to education.

### DEPARTMENT OF PUBLIC WELFARE

**O**N April 12th, Senator William S. Kenyon, of Iowa, introduced in the U. S. Senate a bill (S. 408) providing for the establishment of a Department of Social Welfare. On Thursday morning, April 21, with Commissioner Claxton, I attended what was announced as the first of a series of hearings on this bill, before the Senate Committee on Education and Labor. The first witness heard was Brig. Gen. Charles E. Sawyer, the President's physician and personal representative, who outlined a carefully prepared plan for a proposed new Department of Public Welfare, with a cabinet officer at its head.

General Sawyer told the committee that, under the President's direction, he had been engaged for several months on a systematic study of the situation, the

results of which were embodied in the plan presented. He stated that the President is convinced that the administration is under obligation to take prompt action looking toward the study and solution of certain problems which have become clearly defined in the national consciousness during and since the war.

The fundamental object in view, according to the President is to promote and secure the highest possible type of citizenship, both intellectually and physically. In the approach to consideration of means for realizing this aim, education is given first place, closely and logically supplemented by public health service, and a group of related activities which may be comprehended under the more or less indefinite term, social welfare.

In the beginning the development of a plan for the coordination and promotion of these three services was the task assigned to General Sawyer. Very soon after coming to Washington, however, the President became convinced of the urgency of immediate disposition of the soldier-relief problem, and because of certain vital connections with the first three, a division of "veterans' service administration" was added to the general plan.

### ECONOMIES EFFECTED BY COORDINATION

**G**ENERAL SAWYER assured the committee that substantial economies can be effected by bringing together into one Department the numerous bureaus and offices now engaged upon related activities but scattered about under various jurisdictions. Speaking of the public health service more particularly, because of more extended personal knowledge and experience in this field, he called attention to the fact that every one of the regular government departments as well as several of the so-called inde-



pendent establishments and commissions, is concerned in some way with the public health service. For examples, altho the Bureau of the Public Health Service is in the Treasury Department, the St. Elizabeth's Hospital and the Freedmen's Hospital are in the Department of the Interior; the Census Bureau in the Department of Commerce, and the Bureau of Labor Statistics in the Department of Labor, both have to do with the collection and interpretation of vital statistics; and so on.

According to the plan proposed, there would be an assistant secretary of education, an assistant secretary of public health, an assistant secretary of social welfare, and an assistant secretary of veterans' service administration. As outlined by General Sawyer, the division of education would include the present Bureau of Education, that part of the Federal Board for Vocational Education that has to do with education (activities relating to rehabilitation of ex-service men would go to the Veterans' Service Administration), the education division of the Office of Indian Affairs, and the strictly educational functions performed by bureaus or committees in the War and Navy Departments.

#### AN ADMINISTRATION MEASURE

**T**HE plan was presented to the Senate Committee frankly as an administration measure, and with some emphasis on the President's conviction that early action is desirable. General Sawyer said to the committee:

In conversation with the President this morning it was developed that the President feels that there is nothing before the Congress of more importance than this. If you believe in the plan, he would like to have legislation creating the proposed Department and making it effective as soon as possible. He desires early action, and is not inclined to be happy in getting just resolutions.

Judging by the expressions of opinion, questions asked of the witness, and formal

action taken, the committee was very favorably impressed with the plan. The committee adjourned with the agreement to redraft the Kenyon Bill to make it conform with the plan as outlined by General Sawyer, and it was announced that a new series of hearings will be held as soon as the new Bill is ready.

On May 5th (several days after the preceding paragraphs were written), Senator Kenyon, in the Senate, and Representative Fess, of Ohio, in the House, introduced bills providing for the creation of a Department of Public Welfare, following substantially the plan suggested by the President thru General Sawyer.

#### MR. DODD AND THE UNITED STATES CHAMBER OF COMMERCE

**L**AST month I referred to the fact that Alvin E. Dodd had come to Washington. The fact is he had been here several weeks before I found it out, as I have been away so much. He was brought here by the United States Chamber of Commerce to organize a new Department of Domestic Distribution, in which he will utilize the special knowledge and experience gained as director of the National Retail Research Association in New York City.

A statement announcing the establishing of the new department, dated January 13th, declares that one of the ultimate objects in view is to make some definite contribution on a nation-wide scale to the reduction of the costs of distribution. Big business men realize that the time has come when we as a nation must devise some methods by which to distribute our products more economically and thus lessen the margin that now exists between the producer and the consumer.

The report on one specific piece of work looking toward this end is just now

being completed. More than 15,000 letters of inquiry were sent out to merchants thruout the country asking certain questions concerning overhead expenses and what means are being employed to reduce them. The almost universal response is that merchants are reducing operating expenses in the attempt to meet the public demand for lower prices. The department of domestic distribution is carefully studying and tabulating these replies, and analyzing the ways and means reported as effective in decreasing expenses or increasing production, or both. The results of this study will then be made available to the business world in the form of definite, concrete, practical suggestions, which will undoubtedly have far-reaching effects.

Among the problems which will be taken up by the department Mr. Dodd

has suggested the following: Establishment of an information service; study of the trade associations now at work in the field of distribution; analysis of effective methods of distribution now in operation; cooperation in outlining and directing campaigns for educating the public in the problems and processes of distributing; cooperation with educational institutions offering courses in business administration.

Mr. Dodd is unusually well qualified for making the most of such an opportunity. Not only does he have a wide and favorable personal acquaintance in the business world and intimate knowledge of the conditions with which he will have to deal, but he has behind him a record of successful performance on difficult jobs that is convincing. Congratulations to another "manual training man" who is making good higher up!

—WILLIAM T. BAWDEN.

## IN FOREIGN COUNTRIES

### INSTRUCTIONAL FACTORIES FOR EX-SERVICE MEN IN GREAT BRITAIN

**D**URING the past three months the British newspapers have been giving a great deal of attention to the opening and extension of "instructional factories" for ex-service men, notably at Bristol, at Belfast, and at Barham. Late in January a new wing to the Bristol "factory" was opened by the Minister of Labor, Dr. T. J. Macnamara. This event was made the occasion for a public exhibition of the "factory" and its work. Finished or partly finished work was displayed in motor car body building and wheeled vehicles of other kinds, in tailoring, boot-making, watch and clock work, in electrical engineering and motor repairing, in furniture construction and house building. The "factory" occupies a building constructed during the war by the Gov-

ernment. It was originally used for training female labor for the purpose of dilution. The present addition is larger than the original building. At the time of its dedication 240 men were under instruction. The added space will provide for doubling the attendance.

Early in March Field Marshal French, opened an "instructional factory" in Belfast. This was giving instruction to 179 at the time of opening and expected to provide for about 600 in 14 or 15 different processes or trades.

At Barham an old workhouse erected in 1766 has been turned into a "factory" by cutting out walls, putting in more windows, etc. Among the trades taught here are sign writing, coach painting, hair dressing, tailoring, chair making, horticulture and vehicle building.

## INDUSTRIAL EDUCATION PROBLEM IN SOUTH AFRICA

LAST year a commission investigated the condition and possibilities of the natives of the Cape Province. This commission recommended that a separate section of the Education Department be organized with a chief inspector to look after the interests of the education of the natives. One of the puzzling questions before this commission was what to recommend in industrial training. "All authorities are agreed" says the correspondent to *Times Educational Supplement*, "that training in appropriate forms of manual skill must constitute a large part of the education of the Kaffir. But the ordinary trade school does not appear to have succeeded, and the small number of skilled native artisans restricts facilities for apprenticeship. It is doubtful whether the commission's proposal for more industrial schools will meet the case. More is to be hoped from the suggestion that facilities for apprenticeship should be increased, and that young native artificers should be trained in the main to meet the requirements and to improve upon the charactersitic home-made products of their own people."

### A FRENCH TEXTILE SCHOOL

THE following is quoted from the *London Schoolmaster*:

"The textile school at Roubaix, which has been recently reconstructed, is probably the finest of its kind in the world. Our own textile schools in the North produce most excellent results, but possess nothing like the equipment that this French institution has. In addition to the usual courses in theoretical and practical science and a well-planned design course, there are fully equipped workshops for exhaustive study of spinning, weaving and dyeing. There is an art and industrial museum; a library of 20,000 volumes, exhibition hall for loan collections in art or technology, a hall (seating 650) for public lectures, etc., of the most varied nature connected with the textile industries. There are at present 1,100 students enrolled, some from abroad. One of the most advanced courses includes a sec-

tion in "decorative composition applied to textile industries," for highly complex work in tapestries, brocades, etc. Color will receive special attention: the French have the famous Chevreul as a pioneer in this direction. Dyeing is at present theoretical, but a plant is being laid down for practical work in textile coloring, in connection with which there is a unique section in the library."

### MORE METALWORK IN MANUAL TRAINING

AN EVIDENT tendency is expressed as follows in *The Schoolmaster*:

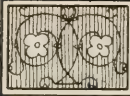
"There is unmistakable evidence of a growing desire for some form of metalwork to supplement the woodwork carried out in the handicraft centres. One of the difficulties which faces every teacher who attempts this combination is lack of special equipment and space. Still, there is much that can be done with a small movable equipment; a few metalwork vices, a few stakes, soldering irons, and a small stock of sheet metal can go a long way to increase the interest of the pupils in the work, and will make many projects possible, especially those with mechanical parts that are at present ruled out because of the limitations of wood and woodworking tools.

### AMERICA AND BRITAIN

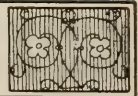
THE above is the title and the following is a paragraph article that attracted our attention in the January issue of *Manual Training*, the official journal of the National Association of Manual Training Teachers in England:

The present state of affairs between these two great countries is responsible for the removal of many mistakes in American school books regarding the past history of events. America now learns that the British nations were not enemies to America when the latter took up arms for their liberty in 1776. They will learn that hundreds of British officers resigned their commissions rather than fight America. That George III was a German who hired Hessians to fight America, because Britons loathed the dirty work; that Burke, Chatham, and the Duke of Richmond opposed the war and stated in Parliament that they hoped America would win. They are learning that it is not so much because of taxation without representation as for taxation without consent that caused the rebellion. In fact they will learn that the American Revolution was a part of the great English movement for liberty that started in the Great Rebellion in England during the time of Charles I and the Long Parliament.





## PROJECTS, PROBLEMS AND NOTES



### THE SCIENCE OF DRIVING NAILS

**T**HERE is nothing new or mysterious about driving nails, nor is any great science involved in the process, and yet, after generations of nail driving, scientists have just discovered that the driving of nails in a packing case is the secret of its success and durability.

The point which has been clearly developed in a number of tests is that the strength of the box depends more upon the nailing than upon the thickness of the material used. Nearly all boxes are of sufficiently heavy material, and very many are unnecessarily heavy; but few are sufficiently well nailed. An investigation was conducted in one factory where a large number of small boxes were used. These cases had always been made with three nails in the sides and four in the tops and bottoms respectively. The sides were  $\frac{1}{2}$ " in thickness and 6-d nails were used, with 5-d nails in the tops and bottoms.

As a test some of these boxes were shipped empty to determine their durability, and a large number of them failed to arrive whole at their destination. Almost any nail construction will suffice to deliver empty boxes, especially in carload lots, but the real test comes when the boxes are filled and the goods go in broken lots with mixed freight. And poor nailing becomes more manifest when boxes are made up a long time before they are actually used to ship goods.

The holding power of a nail is proportional to the area of the surface of the nail in contact with the wood, provided there is no splitting. In the smaller sizes of boxes a slim nail should be used rather than a nail of large diameter, because there will be less splitting of the thin material and greater nail-holding power per weight of nail. For example, a 6-d length with a 4-d guage, provided the head be large, may be decided preferable in soft wood. There is a further advantage in that there are about thirty per cent more nails to the pound. When using slender nails care should be taken to secure large thick heads, as they will not pull from the nails or thru the sides, and checked material will be held much better by them. Nails with large, strong heads may be as slim as can be driven without difficulty.

It has been customary to specify cement-coated or barbed nails, whichever kind the shipping department preferred. The tests developed that the cement-coated nails hold better and barbed nails

not so well as common nails when pulled immediately after being driven. The holding power of a nail is greatest when first driven, and then decreases for about thirty days, after which it remains fairly constant.

If a nailing machine is employed care should be used that it be set to drive the heads just flush, but not to sink them in the sides, tops or bottoms. The effect of over-driving is to destroy the fiber in the wood, and thus destroy their holding power.

Boxes made of excessively dry lumber split badly when the nails are being driven. The greatest difficulty comes from using green or damp lumber, due to the enormous decrease in nail-holding power as the wood dries. This often accounts for the weak nail-holding of some shipments which pass thru regions where the air is very dry and hot.

It is more important that the construction be well done than to add weight to the material. It is of special importance to select the proper material for the ends to go with the sides to get the best nail-holding power. Some lumber makes good sides, but not good ends on account of the tendency to split; so it may be advantageous to use one kind for the sides and another for the ends.

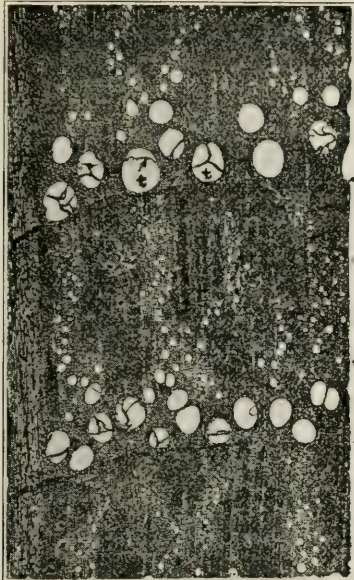
—RALPH H. BUTZ,  
Allentown, Pa.

### IDENTIFICATION OF OAK WOODS

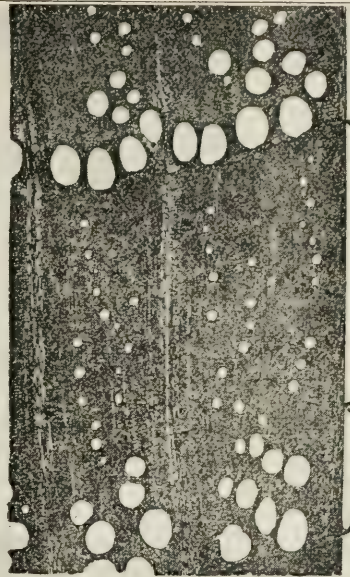
**O**VER fifty species of native oaks assume the proportions of trees, and about twenty-five are used for lumber. After the oaks are cut into lumber, there is no means known to the U. S. Forest Products Laboratory by which they can be identified as to exact species. By examination of the wood alone, however, it is easy to separate the oaks into two groups—the white oaks and the red oaks; and for most purposes, fortunately, it is not necessary to classify them any further. The oaks all average about the same in strength, but those in the white oak group are much more durable under conditions favorable to decay than those in the red oak group.

The white oak group includes true white oak, swamp oak, bur oak, cow oak, post oak, overcup oak, and chestnut oak. The red oak group includes true red oak, yellow or black oak, scarlet oak, Spanish oak, Texan oak, black jack, water oak, willow oak, and laurel oak.

The color of the wood is a ready but not absolutely reliable means of distinguishing the white oaks from the red oaks. Red oaks usually have a dis-

**WHITE OAK**

Cross section magnified  
20 times. (t) - Tyloses

**RED OAK**

Cross section magnified  
20 times

tinctly reddish tinge, especially near the knots. The wood of the white oaks is generally a grayish brown; but occasionally a reddish tinge is found in white oak lumber.

For more accurate identification it is necessary to examine the pores of the wood. These will be found as tiny holes on a smoothly-cut end surface, the largest being visible to the unaided eye. They are not of uniform size thruout each growth ring, but are considerably larger in the wood formed in the spring, decreasing in size rather abruptly towards the summer wood. The large pores in the springwood of the heartwood and inner sapwood of the white oaks are usually plugged up with a froth-like growth called tyloses, and those of the red oaks are open. This feature, however, is not so reliable for classification as the character of the much smaller pores in the summer wood.

To tell for a certainty whether a piece of oak belongs to the white or red oak group, cut the end grain smoothly with a sharp knife across several growth rings of average width. With the aid of a hand lens examine the small pores in the dense summer wood. If the pores in this part of the growth ring are plainly visible as minute rounded openings, and are not so crowded but that they can readily be counted, the wood belongs to the red oak group. If the pores in the summer wood are very small, somewhat angular, and so numerous

that it would be exceedingly difficult to count them, the wood belongs to the white oak group.

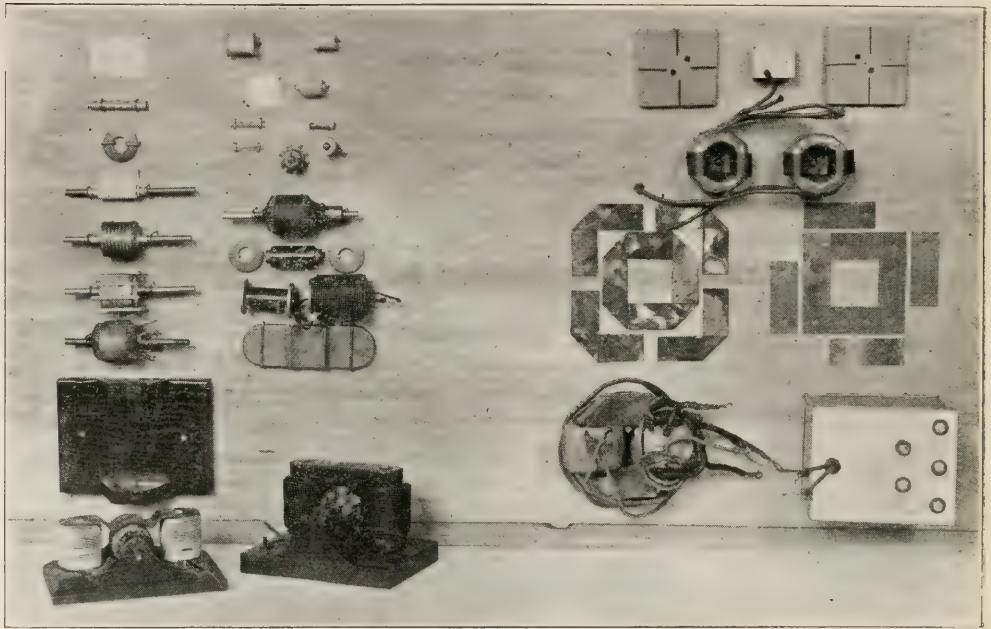
—FOREST PRODUCTS LABORATORY.

**ELECTRICAL CONSTRUCTION PROBLEMS**

**L**ITTLE by little teachers of manual training are discovering that practical problems in electrical construction are among the most interesting to boys of the grammar school period, and gradually there is seen coming into manual training outlines—especially for junior high schools—a number of simple practical problems not only in wiring, bell work, lighting and telephones but also in dynamo and motor construction. The accompanying photograph (next page) shows a display board in the Seward Junior High School in Minneapolis where the boys not only enjoy experimenting with the mysterious force of electricity but where they also learn to construct electrical apparatus and appliances systematically and well. The exhibit board is intended to show the parts and, to some extent, the steps in the process of constructing three pieces of apparatus.

The photograph of the toaster also, reproduced herewith, is another excellent piece of workmanship from the same school. It combines work in the sheet-metal and the electrical shops. The instructor in the electrical work is E. C. Glenn.





ELECTRICAL CONSTRUCTION PROBLEMS, SEWARD JUNIOR HIGH SCHOOL, MINNEAPOLIS

### PIANO BENCH AND ROCKER

Again we reproduce two woodworking projects designed by Harold R. Wise of Boston. The thorough way in which both of these are worked out is apparent.

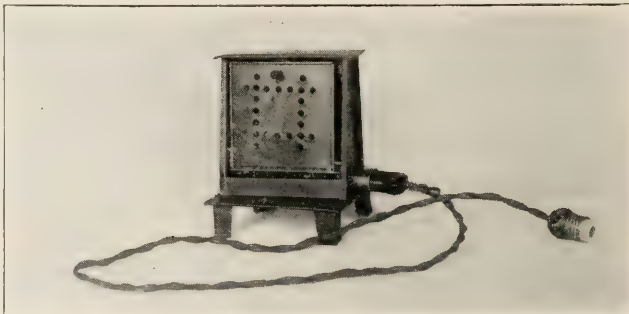
### STRENGTH OF SOUTHERN PINE AND DOUGLAS FIR COMPARED

**T**HERE is little difference between the strength of the southern pines and that of Douglas fir from the Pacific Northwest, tests made at the United States Forest Products Laboratory show. True longleaf yellow pine averages heavier, stronger, and tougher than Douglas fir. True shortleaf pine

averages heavier and tougher than the fir, but is about equal to it in strength as a beam or post. Loblolly pine, though averaging heavier than the fir, is somewhat weaker. The difference in strength between any of these pines and Douglas fir, however, is not so great but that low density pieces of the one species are weaker than the average for the other species.

As far as strength properties are concerned, the choice between any two lots of southern pine and Douglas fir will depend upon the grade and density of the timber composing each lot. The Rocky Mountain type of Douglas fir averages considerably weaker than the Pacific Coast type.

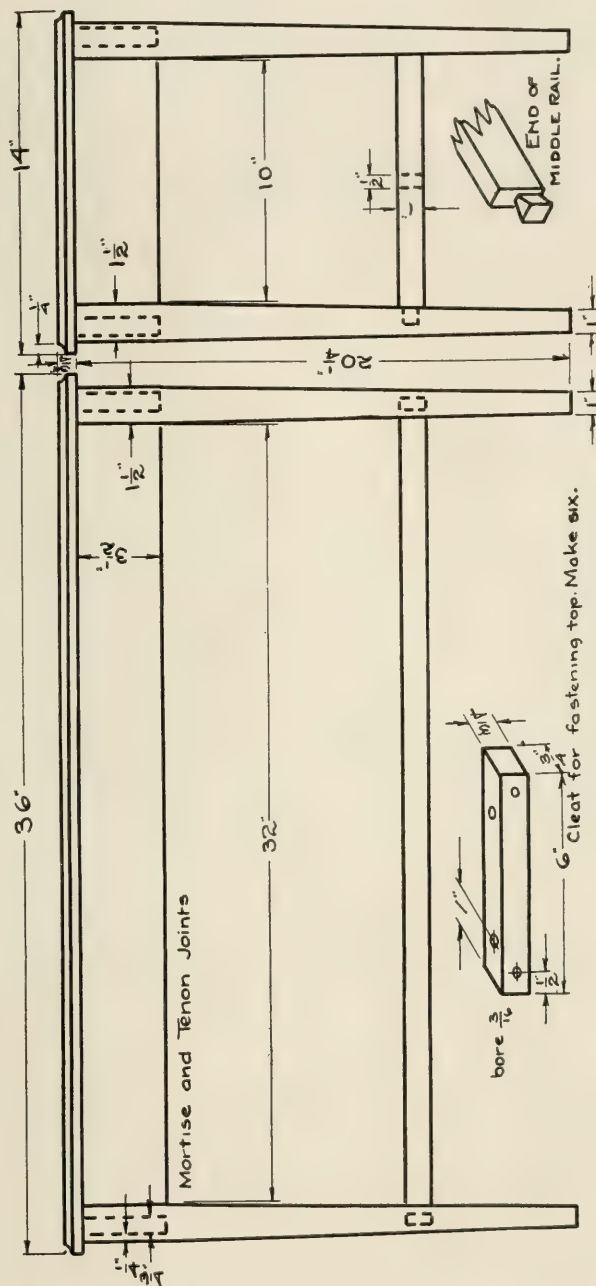
—FOREST PRODUCTS LABORATORY.



ELECTRIC TOASTER MADE BY STUDENT IN SEWARD JUNIOR HIGH SCHOOL, MINNEAPOLIS



# PIANO BENCH.





## CURRENT PUBLICATIONS

*Automotive Ignition Systems.* By Earl L. Consoliver and Grover I. Mitchell. McGraw-Hill Book Co., New York, 1920. Size 6x9 in.; 269 pages; 345 illustrations; price, \$2.50.

This is one of the series of textbooks prepared in the Extension Division of the University of Wisconsin. It has been written to meet the demand for a systematic course of study dealing with the various ignition systems used on automobiles, trucks, tractors and airplanes. It is useful, not only to students, but to men who have to install, adjust and repair ignition systems in the factory and the repair shop, and, as a matter of course, it must be useful to the automobile owner.

*Harness Repairing.* By Louis M. Roehl. The Bruce Publishing Co., Milwaukee, 1921. Size, 6 $\frac{1}{8}$ x9 $\frac{1}{4}$  in.; 53 pages.

As indicated in the title, the book is not for harness makers but it is a series of "repair jobs so illustrated and described that a farmer or farm boy can do the more ordinary repair jobs."

The book appears to be an excellent treatment of this subject. It is well organized, and the author has been particularly fortunate in securing the photographs used for most of the illustrations. His drawings also are clear. These two facts contribute much to the appearance and value of the book.

*The Manufacture of Pulp and Paper.* Vol. I. Mathematics, Reading, Drawings and Physics. By J. J. Clark. McGraw-Hill Book Co., New York, 1921. Size 6x9 in.; 441 pages.

This is the first volume of what would appear to be a most valuable set of books on the paper industry. The second volume will be devoted to mechanics, hydraulics, electricity and chemistry, the third to preparation of pulp and the fourth and fifth to the manufacture of paper.

This set of books is being prepared at great expense under the direction of the Joint Executive Committee on Vocational Education representing the pulp and paper industry of the United States and Canada. This work was undertaken because there is no adequate text on this subject in the English language and none in any language suited to the needs of the workers in the paper industry on this continent.

*American Red Cross Work Among the French People.* By Fisher Ames, Jr. Published by the Macmillan Company. Size, 5 x 7 $\frac{1}{2}$  inches; 178 pages; price \$2.00.

This is another book of the series on the Red Cross work during the war which is being published by The Macmillan Company. The purpose of the book is to acquaint the American people with the

broad character and scope of the American Red Cross efforts during the war.

*Underlay Figures.* By Lydia M. Bolmar. The Manual Arts Press, Peoria, Ill., 1920. A portfolio of 6 plates. 5 $\frac{3}{8}$ x11 in.; price 35 cents.

On each plate is an outline drawing of a different type of figure of a girl or young woman, dressed with underclothing only. These are for use in classes in costume design, the students tracing from the underlay figures and then drawing in line or in full color the dress that suits this type of figure. On the inside of the portfolio are directions for the use of the figures.

These figures have grown out of the author's experience in teaching dress design, and are especially suited for the use of students who have not had a sufficient amount of instruction in drawing to enable them to draw the human figure correctly without some such guide.

*Cam Design and Manufacture.* By F. B. Jacobs. D. Van Nostrand Co., New York, 1921. Size, 6x9 in.; 121 pages; 87 illustrations; price, \$2.00.

The chapter headings of this book are, machine cam design, gas engine cam design, cam followers, master cams, machine work on cams and cam cutters, cam cutting, and cam grinding.

In his treatment of this subject the author has avoided the use of complicated mathematical formulas so that it can be readily understood by the higher grade of workmen and by students with high school training.

*Construction Work for the Primary Grades.* By Edward F. Worst. The Bruce Publishing Co., Milwaukee, 1920. Size, 5 $\frac{1}{2}$ x8 $\frac{1}{2}$  in.; 294 pages; price, \$2.25.

This is a teacher's book of guidance in directing schoolroom construction work in the primary grades. It is arranged by grades and by the months of the school year so as to be immediately practical from the teacher's standpoint.

The aim of the author has been to include in the book only such simple, progressive and practical work as his experience as director of construction work in the Chicago schools has indicated may readily be connected with the academic work of the schools.

The materials used include paper, clay, yarn, and splint. The processes include paper cutting, tearing, measuring, block printing, clay modeling, box making, book construction, weaving, etc. Throughout the book, great care is given to economy in the use of materials and in the cost of conducting the work.



*Dynamic Americanism.* By Arnold Bennett Hall of the Department of Political Science, University of Wisconsin. The Bobbs-Merrill Co., Indianapolis, 1920. Size, 5x7¼ in.; 335 pages.

The purpose of this book is to suggest ways and means by which the study and observation of American government life and politics, whether in the local community or the nation's capital, may be made the basis for the development of a sentiment of dynamic Americanism. It places less emphasis upon political forms than on needs and functions and forces. It aims to clothe "the legal skeleton of civics" with "the flesh and blood of human interest."

*Hand Craft Projects.* By Frank I. Solar, instructor in manual training, Detroit, Mich. The Bruce Publishing Co., 1921. Six sets of 10 cards each, 6½x7 in.; price, 35 cents per set.

These are elementary problems in woodworking—most of them toys or objects which may be constructed in the toy spirit. A working drawing and a perspective sketch occupy the upper part of each card, and the lower part is reserved for brief suggestions concerning the construction of the object. The drawings are good in quality. The problems are evidently selected with reference to use in the elementary schools by boys from the 5th to the 8th grade.

*Rudiments of Handicraft.* By W. A. S. Benson. John Murray, London, 1919. A pamphlet of 40 pages; price, 1 shilling.

This consists of sketches (without dimensions) of a great variety of simple useful objects that can be made from sawn lath and similar narrow pieces of wood, and of descriptive matter covering tools, materials, drawings and methods of painting and staining. It is very suggestive to any teacher in grades, say from 3 to 5, who is desirous of introducing very simple woodwork involving the use of the saw and the hammer as the principal tools.

*Vocational Arithmetic for Girls.* By Mrs. Nettie Steward Davis of the Public School of Trades for Girls, Milwaukee, Wis. The Bruce Publishing Co., Milwaukee. Size, 5½x7¾ in.; 138 pages; price, 70 cents.

This book is divided into four parts: I. The four fundamental processes and common fractions applied to garment making; II and III. Decimals and percentage applied to cost of materials and domestic science problems; and IV. Percentage applied to a variety of home problems.

*Vocational Education.* By Emily Robison and Julia E. Johnson. The H. W. Wilson Co., New York, 1921. Size, 5x8½ in.; 359 pages; price, \$2.25.

This is the second and revised edition of a book

published in 1918. It consists of selected readings and a good bibliography. The readings for the most part are reprints of magazine articles written by the leading advocates of vocational education. The book is a helpful supplementary reader in normal school and university courses in vocational education.

*Staining and Polishing,  
Woodwork Joints.*

*Fretwork—fret cutting, inlaying and overlaying.*

These three English books are published by J. B. Lippincott of Philadelphia. They are uniform in style and size—4¾x7¼ in.; and each contains about 215 pages. The price of each is \$1.50.

The aim of the first volume is to give information in regard to "practically every method of wood finishing." The second provides the woodworker with information concerning the uses and the methods of making the various joints of woodworking. The third deals with various ornamental phases of woodwork. The books contain many drawings to illustrate the text but no working drawings. Each book is provided with a good index.

#### RECEIVED

*Illinois Arbor and Bird Days.* Circular No. 31. Issued by the Superintendent of Public Instruction, Springfield, Illinois. This is the usual illustrated bird day annual, suggesting instruction and exercises for April 15 and October 21.

*What the Chemist Has Done and May Do in War and Peace.* A pamphlet published by the Chemical Foundation, 81 Fulton St., New York City.

*Educational Survey of Wheeling, West Virginia.* Summary of conclusions and recommendations. A pamphlet issued by the U. S. Bureau of Education, Washington, D. C.

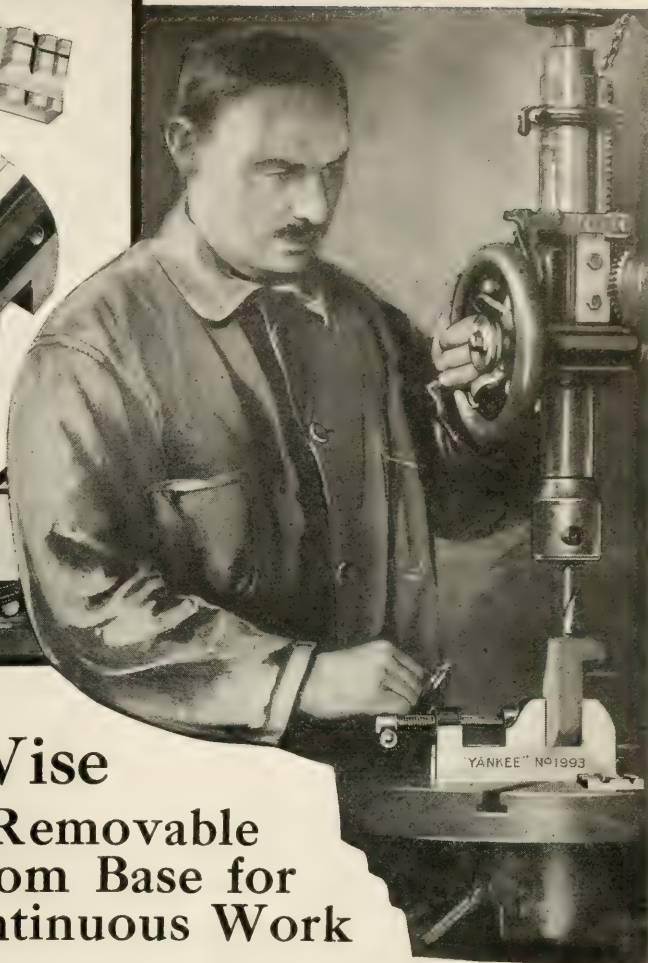
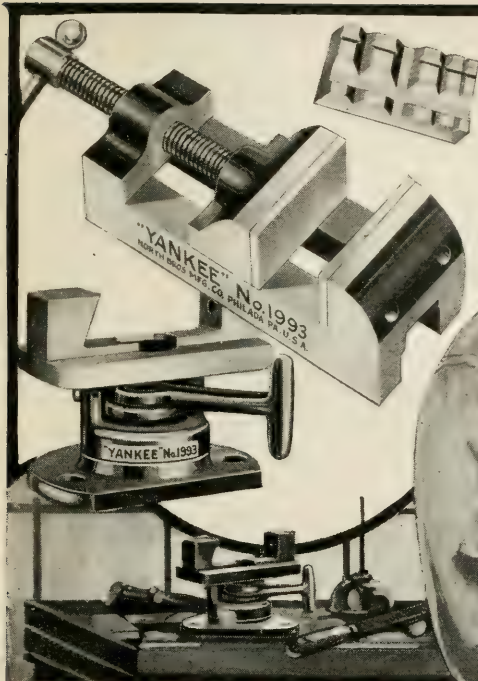
*A Story of the Early Manufacture of Paper.* By John W. Lee, Instructor in Printing, Charlotte High School, Rochester, N. Y. One of a series of printing projects.

*Toy-Making as an Art Craft.* By Marie C. Todd, Art Department, Shortridge High School, Indianapolis, Ind. Waldcraft Bulletin No. 1. Issued by the Waldcraft Company, 257 North Tacoma Ave., Indianapolis, Ind.

*Beautifuling the Farmstead.* By C. H. Schopmeyer. Department Circular No. 155. Issued by the U. S. Department of Agriculture.

*School Assemblies.* The winter number of "School and Home." Issued by the Parents and Teachers Association of the Ethical Culture School, New York City. Price, 30 cents.

*Statistics of City School Systems.* By H. R. Bonner. Bulletin No. 24, 1920. Issued by the U. S. Bureau of Education, Washington, D. C.



# “YANKEE” Vise

## Removable from Base for Continuous Work

Write for Free “Yankee”  
Tool Book

Shows all the famous “Yankee” Tools in action and tells how they can help you.

Here are some of them.

*Ratchet Bench Drills  
Ratchet Hand Drills  
Ratchet Breast Drills  
Ratchet Chain Drills  
Spiral Ratchet Screw-  
drivers  
Plain Screw-drivers  
Automatic Push Drills  
Ratchet Tap Wrenches*

NORTH BROS. MFG. CO.  
Philadelphia

For instance: You're at a point where you can't go on with the job till you've drilled a hole. Work is locked tight in vise, at bench. Lift vise off base—work and all. You'll drill more accurately because alignment is unchanged.

Back to bench—and a twist of the set-screw fastens vise firmly to base again.

Use the “Yankee” Vise in any position. Sides, ends, top, bottom—all are machined perfectly true.

*No. 1993*—With Swivel Base. Cam-throw lever locks vise in any position. Set-screw releases vise from base. Body  $7\frac{1}{4} \times 2\frac{3}{4}$  (wide)  $\times$  3 in. Jaws open  $3\frac{1}{8}$  in.

*No. 993*—Same as *No. 1993*, but without Swivel Base.

*No. 1992*—Body  $4\frac{7}{8} \times 2$  (wide)  $\times$   $2\frac{1}{2}$  in. (new size). Jaws open  $1\frac{1}{8}$  in.

*No. 1991*—Body  $3\frac{5}{8} \times 1\frac{1}{2}$  (wide)  $\times$   $1\frac{1}{2}$  in. (new size). Jaws open  $1\frac{1}{2}$  in.

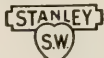
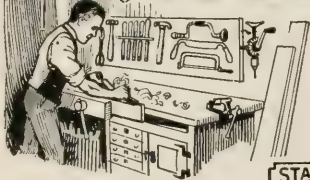
Your Dealer Can Supply You

# “YANKEE” TOOLS

*Make Better mechanics*



# Make sure that your Home Tools are **STANLEY TOOLS**



**G**OOD TOOLS make home tinkering a pleasure; there's a joy in "fixing things" with them and doing creative work, not marred by unbalanced, easily dulled, imperfect tools.



When your hammer is made of carefully forged special steel with perfectly balanced handle of selected white hickory—it's a STANLEY.

Ask for a "Hirwood" STANLEY Screw Driver; it's a handy one in the home; blade, shank and head one piece of steel.

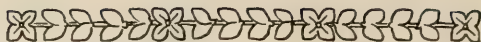
A STANLEY Zig Zag Rule is useful for many purposes besides carpentry. Of an especially fine finish, with joints, tips and strike plates brass plated.

The head, shank and blade of STANLEY "Everlasting" Chisels are forged from one solid piece of tool steel; cutting edges ground sharp.

A STANLEY Brace with a few assorted Bits is a constant joy. No. 921 is nickel plated, with alligator jaws and ball bearing head.

The BAILEY No. 5 Jack Plane is a delight to anyone who loves good tools; cutters adjustable both endwise and sidewise.

**THE STANLEY RULE & LEVEL PLANT.**  
THE STANLEY WORKS  
NEW BRITAIN, CONN. U.S.A.



## FIELD NOTES—(Continued)

where, after the customary noon-day luncheon, the members were addressed by Professor John M. Brewer, director of Graduate School of Vocational Guidance, Harvard University.

Dr. Brewer's first suggestion was that the world of occupation should be incorporated in the various curricula as a subject of academic study. Stress was laid on the fact that vocational guidance too often assumes a dictatorial attitude pointing arbitrarily in one direction only for many pupils, when, as a matter of fact, pupils should be encouraged to indicate a first, second and third choice of possible occupations. The average pupil is too immature to make a "single track" decision as to his future.

The April meeting of The Vocational Education Society was held at Healey's Hotel, and after an enjoyable luncheon the members indulged in an open discussion of "Educational Measurement." Following this the members were given an opportunity to "try out their skill" on some of the United States Army psychiatric tests which proved to be unique and very instructive in several directions.

THE BOSTON METROPOLITAN chapter of the American Red Cross has issued an appeal for a further supply of tables and chairs for use in the devastated areas of France and Belgium, and in consequence of this appeal many of the schools of Boston and vicinity will at once take steps to complete and ship a considerable quantity of this furniture.

The letters of acknowledgment concerning the receipt of previous allotments of furniture, which were shipped to France and Belgium, indicate a heartfelt gratitude for "the kind thought of their more fortunate American brothers and sisters," and are also indicative of the terrible devastation and ruin wrought by the invading Germans during the war.

THE ANNUAL EXHIBITION of the historic old Eliot School in Jamaica Plain, Mass., was held on Saturday, April 2, 1921. An unusually attractive display of adults' work in wood-carving, basketry, drafting, furniture making, etc., was adequately supplemented by childrens' work in woodworking, sewing, etc. The special classwork in this school is under the immediate supervision of George F. Hatch of the Department of Manual Arts, Boston.

—FRANCIS L. BAIN.

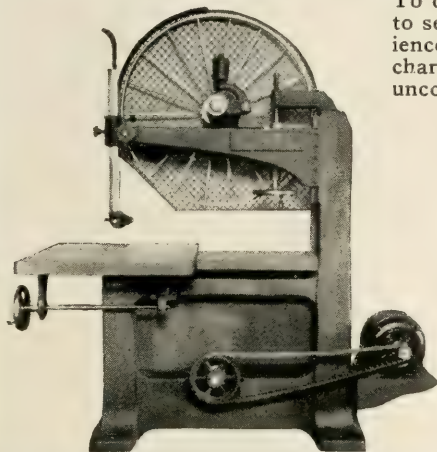
ERIE, PENN., is developing day trade courses. Six are in operation at the present time—for auto mechanics, for electricians, for machinists, for pattern makers, for printers, and for sheet-metal workers. Courses for cabinet makers and wood finishers will probably be opened next September.



# West Side



## BAND SAWS FOR THESE REASONS



To operate a West Side Band Saw—or even to see one—is to realize what careful, experienced designing means to machines of this character. Most convenient of operation; uncommonly strong.

We build band saws of convenience and capacity, each model with choice of three drives: direct motor—belt—gear.

### Motor Driven Ball Bearing No. 78

—illustration to the left is our 42-inch straight column frame band saw possessing important superiorities. Trus-running; perfectly balanced; improved work-table for quick, accurate angle work. Ask for full information.

## West Side Iron Works

Factory:  
GRAND RAPIDS

General Offices:  
1222 Washington Blvd., CHICAGO

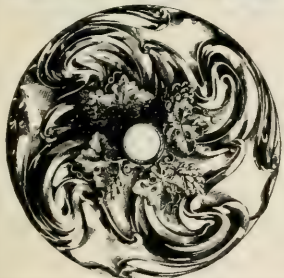


## Black Walnut

### MANUAL TRAINING LUMBER

### Special Candlestick Offer

25 pieces choice Black Walnut 12" length by 1 3/4" diameter selected specially for Turning and Carving. Quality will be guaranteed equal to specimen illustrated, which was turned and carved by a sixteen year old boy from Nevada. Delivered free to any point in United States for \$5.00.



Manufactured by

## FRANK R. PORTER

Washington, D. C.

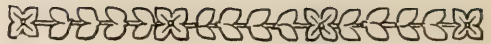
*Write for special price lists  
on combination lots.*



**BLACK WALNUT TREE**

250 Years Old      4 ft. Diameter





# FIELD NOTES—(Continued)

At that time a new high school with a capacity for 1400 pupils in a comprehensive six-year curriculum will be opened. Shops will be equipped for sheet-metal work, pattern making, cabinet making, machine shop work, electrical work, auto mechanics, and printing. There will be two drafting rooms and two rooms for freehand drawing and design.

The print shop at this school is already in operation. It is equipped with the usual hand composition equipment, one each 8 x 12 and 10 x 15 jobbing presses, a Babcock Optimus 25 x 38 press, two intertypes and the usual elementary bindery equipment. Thirty boys are taking the day trade work in printing. Part of their experience is obtained from the publication in this shop of the four school magazines of the city.

ALABAMA is developing a state vocational school for white boys at Ragland. It is known as the Alabama School of Trades and Industries. The state has purchased 100 acres for a site and has appropriated \$30,000 toward the building fund. It is proposed to raise another \$30,000 to add to this fund. Already Ragland has subscribed \$5,000. Senator Watt T. Brown has recently said, "Leading business men of Alabama have now become aroused to the importance of proper training for our white boys, and we have been assured of their hearty support for this institution."

THE HAMILTON WOOLEN Co. of Southbridge, Mass., has provided space for a textile trades laboratory to meet the needs of the boys in the Southbridge Vocational School, who receive their practical experience in the mill of this company. This will provide the ideal combination of school, experimental laboratory, and factory for teaching the textile trades. The *Worcester Telegram*, in an illustrated article, says that "few, if any, cities or towns in the country can offer to their boys as thoro and complete a training in worsted textiles as that now offered by the Southbridge Vocational School."

## MITER SAW BENCHES

The "Tannewitz" Universal Double Revolving Arbor Saw Bench with Sliding Table and Taper Pin Gauges is the only logical tool for the wood shop where frequent setting up is the rule and accuracy is the goal. Send for bulletin.

THE TANNEWITZ WORKS  
GRAND RAPIDS, MICH.

## TOOLS

BENCHES and HARDWARE

HAMMACHER, SCHLEMMER & CO.  
NEW YORK, SINCE 1848 4TH AVE. & 13TH STREET

## GOOD TOOLS ARE ESSENTIAL FOR GOOD WORK

Since 1848 we have adhered to one policy—to handle only the very best in quality.

Our 300 page catalog illustrated above is of particular value to those interested in manual or vocational training. If you haven't a copy ask for Catalog No. 224.

HAMMACHER  
SCHLEMMER & CO.

Hardware, Tools and Supplies

New York, Since 1848, 4th Ave. and 13th St.



# School Printing Outfits



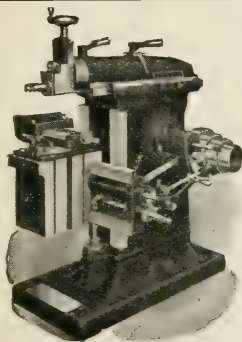
Get Barnhart's estimate on Printing equipment for your School. Expert service in selecting the Machinery, Type and Material that will represent the greatest value for practical purposes and for correct training according to the latest methods of the Printing Craft

## Barnhart Brothers & Spindler

School Outfitting Service Department—Monroe and Throop Streets, Chicago

*Branch Houses in Eight Cities*

Chicago Washington Dallas Saint Louis Kansas City Omaha Saint Paul Seattle



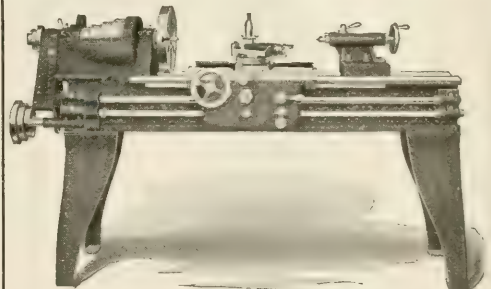
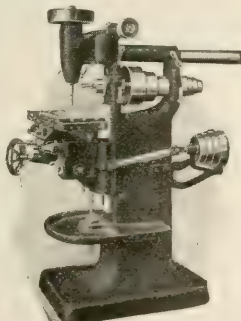
### Steptoe SHAPERS and MILLERS

Steptoe Shapers and Millers are used in a large number of school shops because they are easy to operate and practically fool proof.

Send for our catalogue and learn more about the machines built by a firm with 75 years of experience in the manufacture of high grade tools.

**THE JOHN STEPTOE COMPANY**

Industrial Education Department  
CINCINNATI, OHIO



**COMPLICATED MACHINERY is not adapted for school work**

### STANDARD ENGINE LATHES

are of simple design, combining accuracy with the highest quality of workmanship and materials.

Send for descriptive matter of this medium price machine which has been especially designed for school work.

**"QUALITY WITHOUT FRILLS"**  
Sizes 14"—16"—18"—20"

**THE STANDARD LATHE WORKS**  
2951-61 Colerain Ave. CINCINNATI, OHIO



# Its Easy Working Qualities Recommend Redwood

Redwood's close grain, fine texture, and softness, its excellent paint and varnish-holding surfaces and freedom from warping, swelling and shrinking, its high percentage of clear wood and its excellent gluing qualities—in short, easy working properties make Redwood especially suitable for manual training work.

These properties explain the extensive use of Redwood for cigar, candy, glaze fruit and shirtwaist boxes, clothing chests, screen frames, bird houses and incubators.

Vertical grain up to 12" wide—slash grain any desired width. Thicknesses 3-16" and up.

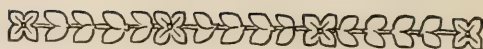
Samples in straight and slash grain, various thicknesses, gladly supplied to manual training instructors.



2090 McCormick Building  
New York Kansas City

THE PACIFIC LUMBER CO.  
San Francisco Los Angeles

The Largest Manufacturers and Distributors  
of California Redwood



## FIELD NOTES—(Continued)

A NEW TYPE OF SCHOOL EXHIBIT is announced in Oakland, Calif. The plan is to make it possible for visitors to compare the school work with commercial work. A suite of rooms will be equipped with furniture manufactured by students in the manual training department of the schools, and another will be outfitted by furniture dealers and a comparison will be effected between the two.

THE AMERICAN DEFENSE SOCIETY 116 East 24th St., New York City, is distributing to schools, free of charge, a portrait of Theodore Roosevelt, bearing his last message to the American people. It is a good portrait sent in a cardboard roll so that it will not wrinkle. It would be a fine thing if every manual training shop in the country would procure one or more of these pictures and frame them appropriately for their school.

WITH THE GENEROUS COOPERATION of manufacturers in contributing equipment, the evening vocational school in Wilmington, Del., is starting classes in applied electricity this year.

THE SCHOOL OF VOCATIONAL EDUCATION at the Oregon Agricultural College, Corvallis, Oregon, is issuing what is called the *Vocational Teachers' Exchange*, edited by S. R. Nichols. Each number is a group of mimeographed sheets, in which is discussed problems in vocational education—especially those of interest in Oregon.

THE STREETS of West Brookfield, Mass., are being marked with 35 name signs made by the manual training class at the junior high school in that town. The signs are being constructed under the direction of the manual training teacher and lettered under the drawing teacher.

## Build Your Own PHONOGRAPH

Instructive—arouses pupils enthusiasm—provides one of the best problems in cabinet making.

Let Your Pupils Build  
Choraleon Phonographs

We furnish, plans, blue prints, motors, tone arms, case material—in fact, everything required. Full instructions. Choraleon's have fine tone. Play any record. Ask for particulars.



CHORALEON PHONOGRAPH CO.  
621 7th St., Elkhart Ind.

# SIMONDS

## Order Your Saws Now

Are you thinking of new equipment for your Manual Training department? If it's saws consider the Simonds first.

They are standard of quality and stand hard usage. Write us about your requirements.

THE SIMONDS BAND SAW

Tell You It's  
A Great Saw

## Simonds Manufacturing Co.

"The Saw Makers"

Fitchburg, Mass.

Chicago, Ill.

## An Ideal Text For Continuation Schools

### Preparatory Mathematics

FOR USE IN

TECHNICAL SCHOOLS

By HAROLD B. RAY

AND ARNOLD V. DOUB

Instructors in Mathematics,

Cass Technical High School, Detroit

A Wiley Technical Series Book

Joseph M. Jameson, Editor

Several State Directors pronounced this book an ideal text for continuation schools, after examining the manuscript. It is just what its title implies—an elementary, applied mathematics—and is written from a practical, technical viewpoint—all its problems are practical trade problems.

This book will contain about 65 pages, 5 by 7 inches, and will be cloth-bound. It will be issued early in June.

Another "Cass" Book Ready in June

### Mathematics for Shop and Drawing Students

By H. M. KEAL, Head of Department of Mathematics, and C. J. LEONARD, Instructor in Mathematics, Cass Technical High School, Detroit. The Wiley Technical Series.

An excellent night-school text, giving that part of algebra, geometry and trigonometry which the student will find of importance in his everyday work.

About 200 pages, 5½ by 7½, cloth.

### Mathematics for Electrical Students

By H. M. KEAL AND  
C. J. LEONARD

A book similar to the above, for students of electricity. (Ready in July.)

#### USE THIS COUPON

John Wiley & Sons, Inc.,  
432 Fourth Avenue, New York City.

You may send me the following on 10 days' approval:

Ray & Doub's PREPARATORY MATHEMATICS

Keal & Leonard's MATHEMATICS FOR  
SHOP AND DRAWING STUDENTS

Keal & Leonard's MATHEMATICS FOR  
ELECTRICAL STUDENTS

I agree to pay for the books or return them within 10 days of receipt.

Also please send me a copy of your Vocational News and put my name on your mailing list.

Name.....

Address.....

If teacher, state school.....

If not teacher, give reference.....

M. T. M.5-21



*Birmingham High School  
Birmingham, Ala.*

## Forge Shop Equipment

Buffalo fans and forges are rendering excellent service in forge shops throughout the world. We are able to offer typical layouts with photographs of installations which will enable the proposed user to determine the number of forges possible to install in any space available.

Our Engineering Department is ready to give you any information on supplying blast and removing smoke and gases.

*Write for Catalog 205-31.*

**Buffalo Forge Company**

BUFFALO, N. Y.

*"Buffalo"*

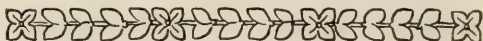
## Marqueterie, Inlay Borders and Purflings for

**Manufacturers and Vocational  
Schools**

Insets for Trays, Panels, Cabinets, etc. carried in stock.  
Natural and Transformed Veneers in great variety.  
Lines in Holly, Satinwood, Box, Mahogany and Black

**J. BERNARD CO.**

**422 to 30 East 53rd St. New York**



### FIELD NOTES—(Continued)

SEATTLE is the first city in the State of Washington to take advantage of the new state law which makes possible for boys and girls under eighteen to accept employment and to carry on their education at the same time.

Courses providing for four hours of instruction each week have been planned. The instruction will be of two kinds, vocational and general. Two hours of each type of work constitute the four-hour program required for each pupil.

The vocational instruction will be determined largely by the individual needs of each particular student with the purpose of making him more efficient in his particular line of work or preparing him for some occupation he desires to enter.

The courses of instruction are based upon the findings of the survey made last year.

It is stated that the boys have made equipment valued at from \$400 to \$500 at an initial cost of about \$70.

AN EXCELLENT PLAN of cooperation between Dunwoody Institute and the University of Minnesota has been worked out. An exchange of teachers has been arranged which will make it unnecessary for the University to duplicate the

## Cushions, Spring Seats Upholstering Supplies

We issue price list which also contains valuable information for Instructors in Manual Arts.

It is free—write for it.

**DODGE-DICKINSON CO.**

Bloomington, Illinois



# Seventh Annual Catalog "Hard-to-Get" Materials

OUR new catalogue, covering the school year of 1921-1922, will be out the last of August. This Seventh Annual Catalog of "Hard-to-Get" Materials, will show many new additions to our line. You will be surprised at the new projects you can now undertake, because of our being able to furnish you with the "Hard-to-Get" parts.

We want every Manual Training Instructor to get this catalogue. A copy will be printed for you, but you may not get it unless you send us your name at once and inform us to what address your catalogue should be mailed in the Fall. Write today!

## Thurston Manual Training Supply Co.

Jobbers and Manufacturers.

Anoka, Minnesota.



Who can name the limits of the inspiration of the right drawing materials in the hands of your pupils?

Often the difference in tools is all the difference between failure and success.

Put your pencil drawing on the right road with

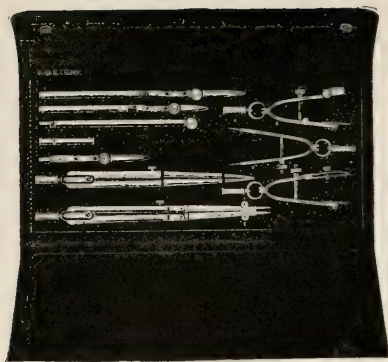
**DIXON'S  
ELDORADO**  
*"the master drawing pencil"*

### SAMPLE OFFER TO TEACHERS

Dixon's Eldorado is made in 17 leads. Tell us whether you teach mechanical or freehand drawing and we will mail you suitable samples.

**Joseph Dixon Crucible Company**

Pencil Dept. 19-J      Jersey City, N. J.



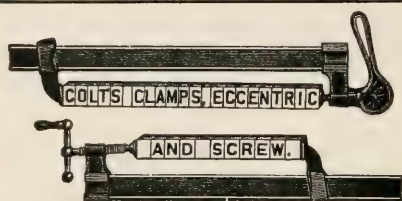
## MINUSA (Trade Mark) DRAWING INSTRUMENTS MADE IN U. S. A.

Modern American methods of quantity production have enabled us to place on the market this line of drawing instruments (which possess a high degree of excellence) at a price within the reach of the Manual Training Student.

PERFECT SATISFACTION AT MODERATE COST

Price list sent on application.

**KEUFFEL & ESSER CO., HOBOKEN, N. J.**



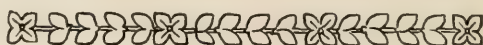
Forty styles of Quick Acting Clamps for the Worker in Wood, Cement and in the trades generally.

Your dealer will supply you.  
Ask for catalog No. 296.

**BATAVIA CLAMP CO.**

237 Center Street

BATAVIA, N. Y.



### FIELD NOTES—(Continued)

Dunwoody equipment for vocational teacher-training classes. The teachers will study the theory at the University and do practice teaching at Dunwoody.

AN EXAMINATION for teachers in the following subjects in the elementary schools of Jersey City will be held in Jersey City, Saturday, June 11 For men—Manual Training, Vocational Machine Shop Practice. For women—Sewing. The Salary Schedule for these positions goes to a maximum of \$2600 for men, and \$2100 for women. Examination will be held in the Dickinson High School. Candidates should make application in advance to Ernest B. Kent, Director of Manual and Industrial Training.

### TRADE NOTES

THE 1921 meeting of the Western Arts Association at Bradley Polytechnic Institute in Peoria marked a return to pre-war times by the presence of commercial exhibits.

It was a fortunate meeting for at least two reasons: first, the delightful hall in which the exhibits, both educational and commercial, were housed; and second, the location, in the gymnasium, just across from Bradley Hall where the meetings were held. The convenient location, the absence of distractions and outside interests made it enjoyable and easily possible for all to view the exhibits with ease and comfort.

**Specialists in  
Manual Training Lumber**

Maisey & Dion

Hardwoods

KILN DRIED AND AIR DRIED

OFFICE & YARDS 2349 to 2423 So. Loomis St.

TELEPHONES

CANAL 1830

CANAL 1831

CANAL 118

**CHICAGO  
THE  
Great Central Market**

## TOOLS

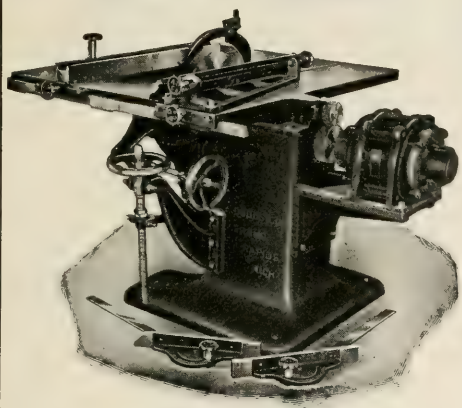
For Manual Training Shops.  
Send your inquiries to and get the especially low prices quoted by

**MONTGOMERY & CO. Inc.,**  
105 Fulton Street New York City



# SAW TABLES

## For MANUAL TRAINING



This cut shows our motor driven spiral gear saw table. No countershaft, no belts. Tilting or stationary tops. Write for circular and prices on our entire line. Address

**ALEXANDER DODDS CO.**

451-453 Monroe Ave., N.W.

GRAND RAPIDS, MICHIGAN, U. S. A.

# Cedar Chest Material

**Selected Aromatic Red Cedar of Beautiful Grain and Texture**

Our lumber is bought direct from the mills in Tennessee, is seasoned especially for cabinet work and is matched to show the proper harmony of color.

Our model provides great range in construction and detail.

Parts are of larger dimension than needed, allowing sufficient for waste.

Price, without tray, \$16.00.

Price, with tray, 17.25

Above prices, F.O.B. Indianapolis, Ind.

**INDUSTRIAL BOOK AND EQUIPMENT COMPANY**

Indianapolis, Indiana

# Kewaunee

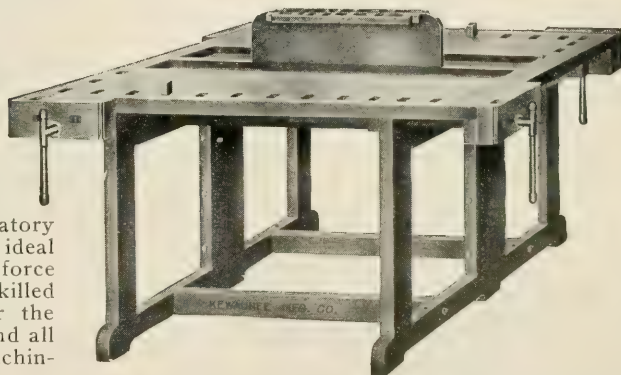
## Manual Training Furniture

In our plant at Kewaunee—the largest in America devoted to the manufacture of high grade Laboratory Furniture—we have that ideal manufacturing condition—a force of long-service technically-skilled workmen, with a love for the fashioning of fine woods, and all the modern labor-saving machinery and equipment that contribute to making a better product at moderate cost.

Kewaunee Manual Training Furniture, like all other Kewaunee Equipment, is substantially built, finished to an unusual degree, and is exactly suited for the purpose for which it is built.

Educational Executives considering new equipment should write for a copy of the Kewaunee Book. Sent free.

Address all inquiries to the factory at Kewaunee.



**Desk No. 1907**—This is a double bench, with head and tail vises, securely bolted together. Tool rack elevated in center. Can be supplied with drawer sections.

**Kewaunee Mfg. Co.**  
LABORATORY FURNITURE EXPERTS  
111 LINCOLN ST.

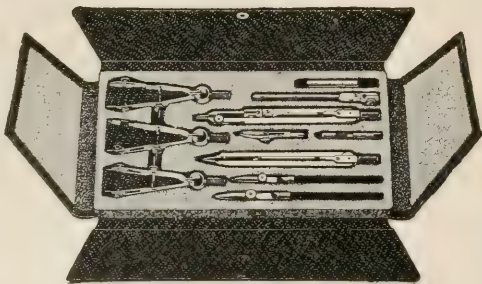
**KEWAUNEE, WIS.**

New York Office, 70 Fifth Ave.

BRANCH OFFICES:

Chicago Minneapolis Little Rock Atlanta Columbus Alexandria, La. Los Angeles  
Dallas Oklahoma City Jackson Spokane Denver Kansas City Toronto, Can.





## U. S. DRAWING INSTRUMENTS

are the best for shop drawing.  
Can also supply Genuine Richter Instruments.  
Write and give requirements.

**U. S. BLUE-PRINT PAPER CO.**  
CHICAGO, - - ILLINOIS

## Tools for Sheet Metal Work

Manual training, vocational and technical schools are invited to communicate with us regarding equipment of shops for sheet metal work, the importance of which is constantly increasing, owing to the popularity of sheet metal as a substitute for other materials.

Ask for catalog M T 56.

**NIAGARA MACHINE AND TOOL WORKS**  
BUFFALO, N. Y.

Manufacturers of  
MACHINERY FOR WORKING SHEET METALS

## SIMPLIFY GRINDING

With Mummert-Dixon Oilstone Grinders. Five wheels for almost every class of grinding. They accomplish the work quickly and accurately. With this machine your students can experience the pleasure of sharp tools.



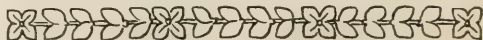
The Modern  
Edge Tool  
Sharpening  
Machines.

The  
Standard  
for all  
Industrial  
Schools.

**Five  
Leading  
Features**  
Coarse Oilstone  
Wheel  
Fine Oilstone  
Wheel  
Emery Wheel  
Grinder  
Cone  
Leather  
Wheel

Furnished for motor drive or with counter-shaft  
Send for full descriptive bulletin

**MUMMERT-DIXON CO., Hanover, Pa.**



### TRADE NOTES—(Continued)

Many exhibitors of former years were present, and it gave a splendid opportunity for members of the Association to renew acquaintances and to gain new ideas regarding the most modern and up-to-date equipment, tools and supplies. Among the exhibits attracting special interest was a complete outfit for linoleum-block printing together with an attractive display of the work done. It was in charge of J. K. Phillips of the Linoleum-Block Printing Supply Company of Jersey City, N. J.

Other exhibitors were:

Favor, Ruhl & Co.,  
Bruce Publishing Co.,  
Practical Drawing Co.,  
American Crayon Co.,  
S. C. Johnson & Son,  
Stanley Rule & Level Co.,  
Manual Arts Press,  
Disston & Sons,  
Abbott Educational Co.,  
Simonds Mfg. Co.,  
Devoe Reynolds Co.,  
South Bend Lathe Works,  
Thomas Charles Co.,  
Oliver Machinery Co.,  
Binney Smith & Co.,  
Brown Robertson Co.,  
American Wood Working Machinery Co.,  
American Type Founders Co.,  
Prang Co.,  
Eugene Dietzgen Co.,  
Singer Sewing Machine Co.

### BALL BEARING BUTTS

THE STANLEY WORKS of New Britain, Conn., have recently published an attractive catalog, "Ball Bearing Butts for Permanence." It is a forty-eight page booklet, beautifully illustrated and attractively printed in colors. It illustrates and describes in a very concise manner the various types of Ball Bearing Butts manufactured by the Stanley Works.

# MAYDOLE HAMMERS



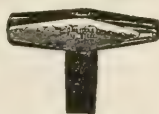
Adze Eye  
Nail Hammer



Machinists'  
Hammer



Blacksmiths'  
Hammer



Copperworkers'  
Hammer



Adze Eye  
B. F. Hammer

JUST A FEW OF OUR HAMMERS

All our Hammers are forged of Crucible Tool Steel—tempered by hand.

Booklets containing a story of David Maydole's life and mechanical data for the boys will be sent on request

THE DAVID MAYDOLE HAMMER CO.

NORWICH, N. Y.

IMMEDIATE  
DELIVERY ON



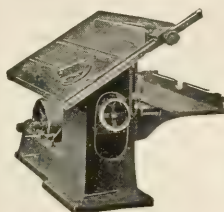
## Drawing Instrument Sets

WRITE FOR CATALOG AND  
PRICE LIST TODAY.

DO NOT DELAY YOUR ORDERS—  
SUPPLY LIMITED.

**FREDERICK POST COMPANY**

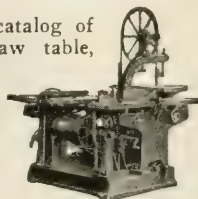
Dependable Supplies for  
Engineers, Architects and Schools.  
CHICAGO



## Crescent Wood Working Machines

are the tools your students will eventually use so give them the opportunity now of learning about this splendid line of wood working machinery.

Send today for our catalog of band saws, jointers, saw table, shapers, variety wood workers, planers, planers and matchers, cut off saws, disk grinders, borers, hollow chisel mortisers, Universal wood workers.

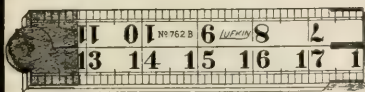


**The Crescent Machine Co.**

46 CHERRY ST.

LEETONIA, OHIO

# LUFKIN



STEEL and WOOD RULES - - MEASURING TAPES

Complete high grade lines

On Sale Everywhere. Send for Catalog.

SPECIFY—

**LUFKIN**

**THE LUFKIN RULE CO.** Saginaw, Mich.

New York

No. 106-110 Lafayette St.





## CLASSIFIED ADVERTISEMENTS



*Do you want to sell or want to buy some school shop supplies? Do you want to employ a teacher? Do you want a new position? Advertise your wants in these classified columns. Rate 20c a line, minimum \$1.00.*

### ELECTRICAL PROJECTS

**BUILD "PEPCO" ELECTRIC TOASTERS**—A useful and attractive project. Buy the parts from the Practical Electrical Projects Co., 990 North Green Bay Road, Highland Park, Illinois.

### UPHOLSTERY MATERIALS

**UPHOLSTERY SUPPLIES FOR MANUAL TRAINING**—We carry most things needed in the manual training departments such as, tools, imitation and genuine leathers, and upholstering supplies. Tray handles, catches and knobs, casters, mirrors, etc. Write for our Catalog. F. A. Rauch & Co., 410 So. Market St., Chicago, Ill.

**CUSHIONS**—You know your cushions will be made right when furnished by the Grand Rapids Cushion Company. Write for estimates on cushions and all kinds of upholstery supplies. Grand Rapids Cushion Company, Grand Rapids, Michigan.

### MANUAL TRAINING LUMBER

**AMERICAN WALNUT LUMBER**—We carry a stock of over two million feet of Walnut Lumber, consisting of all grades and thicknesses from  $\frac{1}{8}$ " to 4". Due to this large stock we are always in position to supply dry lumber for Manual Training use. Send us your inquiries. Frank Purcell Walnut Lumber Company, 12th Street & Belt Line, Kansas City, Kansas.

**AROMATIC TENN. RED CEDAR BOARDS**. Small shipments a specialty. Write us for prices delivered at your railroad station. Earthman Lumber Co., Murfreesboro, Tenn.

**MORGAN MANUAL TRAINING MATERIALS**—A perfect system of dry kiln enables us to give you lumber thoroughly dry. Carrying in stock large quantities of different woods permits us to fill your orders with the best selections. Write, sending us a list of the materials you desire. We will quote you attractive prices. Morgan Company, Oshkosh, Wisconsin.

**LUMBER**—Maisey & Dion, 2349 to 2423 South Loomis St., Chicago, Illinois, carry in stock a large and diversified stock of MANUAL TRAINING LUMBER. Fifteen years' experience with schools enables us to fill such orders satisfactorily.

### SCHOOL SHOP SUPPLIES

**SODERING SUPPLIES**, including the famous Allen Non-Acid Sodering Fluxes—in stick, paste, salts and liquid form; handy soder sets, sodering tools, aluminum soder and flux. As paticers in the development of fluxes that far surpass muriatic acid in every way, and as the original exponents of non-acid fluxes, the House of Allen has for 25 years maintained a position of leadership in the Arts and Crafts concerned with sodering. Send for our Bulletins, L. B. Allen Co. Inc., 4584 N. Lincoln St., Chicago, Ill.

### BLUE PRINTS

**GRANDFATHER'S CLOCK**—Blue prints, finishing material and instructions. Also works, dial, weights and pendulum can be purchased from us at surprisingly low prices. Send for particulars of our attractive offer. Clock Company, 1666 Ruffner St., Philadelphia, Pa.

### ANNOUNCEMENTS

**GLAZES**—Judson T. Webb, of Lewis Institute, Chicago, and manufacturer of the Webb pottery glazes and underglaze colors, has moved his Laboratory and business office from Lewis Institute to 1710 W. 99th St., Chicago. He is prepared to furnish his glazes and colors as usual. Send for new circulars. Judson T. Webb, 1710 W. 99th St., Chicago, Ill.

**IT IS NOW POSSIBLE** for you to secure the parts necessary to build electric toasters. Write today for circular and price list to the Practical Electrical Projects Co., 990 North Green Bay Road, Highland Park, Illinois.

### BASKETRY

**BASKETRY MATERIALS** for schools and craft workers. Reeds, willow, chaircane raffia, Indian ash splints, braided rush and straw—fine smooth quality—dyes and finishes. Any amount of reeds sold from a half pound up. Also tools and books of instruction. Send for free catalog. "Everything for Basket Making." Louis S. Drake, Inc., 34 Everett St., Allston, Mass.

**PINE NEEDLES FOR BASKETRY**—Brown and green, tied bunches, thirty cents lb., without postage. Tiny cones, fifteen cents, dozen. Florence Williamson, Fountain Creek, Maury County, Tennessee. Fall address, Laurel, Mississippi.

### PRINTING SUPPLIES

**TYPE**—Manufacturers of Metal Type, Wood Type, Reglet, Brass Rule and Printers' Supplies. In no trust or combination. Empire Type Foundry, Buffalo, N. Y., Delavan, N. Y.

**PRINTERS' TYPE**—The character of your printed product depends largely upon the quality of the type you use. Our material is manufactured to the highest standards, accurate, and will withstand long wear. Have you our catalog? Rettew Printing Co., Foundry Dept., Reading, Pa.

### ELEMENTARY HANDWORK

**TAWIDO LOOMS** with four treadles weave from 12" to 20" widths. Desk and Table Looms, 6" to 12". Tapestry loom 34". Shuttles, Yarnwinders, Warp Frames. Instruction in pattern weaving and tapestries. Elna M. De Neergaard, Tawido Looms Studio, 23 Union Square West, New York, N. Y.

**EVERYTHING FOR ELEMENTARY HANDWORK**—Also for basketry, weaving, bookbinding and chair caning, Mounting boards, Waldcraft dyes, crayons, burlap, scissors, punch and eye sets. Thomas Charles Co., 2249 Calumet Ave., Chicago.

### METAL WORKING SUPPLIES

**DO YOU TEACH METAL WORK**—The educational value of metal construction and metal working is unquestioned. The practical instruction is far superior to wood working. Art and Manual Training easily coordinate in metal work. We have almost all the supplies required and are trying to bring about pre-war prices. Send for our catalog. Lewis & Co., 245 West Lawrence St., Albany, N. Y.

### PHONOGRAPH PARTS

**PHONOGRAPH PARTS**—Builders and prospective builders should send stamp for my catalogue of Reliable Motors, Tone Arms, Cabinet Hardware, Automatic Stops, Repeaters, etc. Kremer's Phono Parts Store, 118 West Court Street, Dayton, Ohio.





## CLASSIFIED ADVERTISEMENTS



### ELECTRIC TOASTERS

**"PEPCO" TOASTERS** are practical and attractive and can be easily built with parts furnished by the Practical Electrical Projects Co., 990 North Green Bay Road, Highland Park, Illinois. Write today for circular and price lists.

### HICKORY SPLINTS

**HICKORY SPLINTS—HAND MADE**,  $\frac{1}{2}$ " wide material for chair and basket weaving. One dozen seats \$1.50, post-paid. Splints  $\frac{3}{4}$ " wide, one dozen seats \$2.40. \$.25 extra beyond 5th zone. Cash with order. Prompt shipment. Rush your order. Hardin Splint Mfg. Co., Hawesville, Ky.

### WORKSHOP NOTE BOOKS

**WORKSHOP NOTE-BOOK — WOODWORKING** — Greene. A small-size textbook and note-book combined. It furnishes a few general and extremely important directions about tools and processes, and provides space for additional notes and working drawings of exercises and articles which the pupil is to construct. It essentially a collection of helps, ideas, hints, suggestions, questions, facts, illustrations, etc. The note-book is full of suggestions: shows a keen insight into subject matter and teaching methods and is an effective teaching tool. Price, 28 cents. The Manual Arts Press, Peoria, Illinois.

**THE CONSTRUCTION AND FLYING OF KITES** is always an interesting subject to boys. A book of this title by Miller contains twenty-two illustrations, including seven full-page plates of drawings of kites. Detailed construction given; kite tournament described. Price 25 cents. The Manual Arts Press, Peoria, Illinois.

### HOUSE PLANNING

**HOUSE PLANNING**, Van Deusen. A booklet containing in simple, well illustrated form, notes on an elementary course in house planning. The course is grouped under four problems, full of interest and suggestive. Price, 25 cents. The Manual Arts Press, Peoria, Ill.

**ARCHITECTURAL DRAWING PLATES**, Elwood. A fine collection of plates showing the various details included in the plans for frame houses. They are rich in information and are excellent examples of architectural drafting. Bound in heavy paper covers. Price, 60 cents. The Manual Arts Press, Peoria, Ill.

### TEACHERS' HELPS

**ROOF FRAMING TABLES**, Griffith. A remarkably convenient device for use in framing the various members of square and rectangular roofs. The tables are printed on cards to be used in connection with celluloid container. Complete instructions to accompany. All contained in attractive case. Price, \$1.50. The Manual Arts Press, Peoria, Ill.

**MECHANICAL DRAWING CONVENTIONS**—A set of six cards treating of "Gothic alphabet," "lines and their uses," "dimensions," "methods of showing breaks," and "shading." Of value to students of elementary mechanical drawing. Price, 20 cents. Sold by The Manual Arts Press, Peoria, Ill.

**WOOD PATTERN MAKING** and wood turning are simply treated in the textbook and note-book combined, entitled **Pattern-Making Note-book** by Greene. Illustrated with simple, clear-cut line drawings. Provides additional space for notes and drawings. An effective teaching tool with beginning students. Price, 32 cents. The Manual Arts Press, Peoria, Ill.

## TURN YOUR SPARE TIME INTO MONEY

By representing this magazine while attending summer school. An especially attractive proposition is to be offered to one aggressive student in every school. Apply at once before your school is taken.

Address, Business Manager

**THE MANUAL ARTS PRESS**  
Peoria, Illinois



## TEACHERS' AGENCIES



## REMEMBER

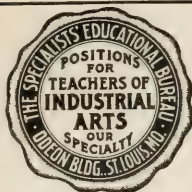
**National Educational Agency**  
1215 State Life Building  
INDIANAPOLIS INDIANA

Indiana is especially interested in Vocational Education and always has a welcome for good teachers for these subjects. We can put you in touch with positions and promotions. Write us at once for details concerning positions open.

MARY FRANCES WILSON



## TEACHERS' AGENCIES



**It's Different!** —a teachers' agency that does not place teachers of elementary school subjects. Leading bureau in America for specialists in Manual Arts. Half of the state universities have selected our candidates. Quality service only. Possibly we can add hundreds of dollars to your income. Write for details.

**SPECIALISTS' EDUCATIONAL BUREAU**

**ODEON BUILDING  
ST. LOUIS, MISSOURI**

**A  
STUDIED  
SERVICE  
FOR EACH  
TEACHER**

Somewhere there is a position.  
Somewhere there is a teacher.  
We know where the position is.  
You tell us where the teacher is.

**MINNEAPOLIS  
TEACHERS  
AGENCY**  
602 Nicollet Ave.  
Minneapolis, Minn.

**THE ACME TEACHERS' AGENCY** has many calls for teachers of Manual Training. It places Teachers to their financial profit. Write for copy of Short Stories about Salaries.

1131 HEALEY BLDG., ATLANTA, GA.

## NORTHWESTERN TEACHERS AGENCY

Home Office  
Boise, Idaho

Utah Office  
Salt Lake City

California and Hawaii  
Berkeley, California

**THE LARGEST WESTERN AGENCY**

**FREE ENROLLMENT**

Enroll at Once—Unequaled Service for the Whole West

Excellent Vocational Positions Open, for immediate appointment and for September, Salaries and location very desirable. No fee unless appointed, and NO REGISTRATION FEE.

Write today. **OSWEGO TEACHERS AGENCY** Box 27E, Oswego, N. Y.



WM. RUFFER, A. M. .... Manager  
W. S. FRY, B.S. .... Asst. Manager  
W. B. MOONEY, A. M. Asst. Manager  
and FIELD REPRESENTATIVE

### INDUSTRIAL ARTS TEACHERS COME TO HEADQUARTERS

WRITE TODAY FOR "THE ROAD TO GOOD POSITIONS"—AND ENROLLMENT CARD

UNEXCELLED SERVICE—FREE ENROLLMENT  
Other Offices: IN ALL OFFICES

Portland, Ore., North W. Bank Bldg.; Minneapolis, Lumber Exchange; Los Angeles, Chamber of Commerce, Kansas City, Mo., Chicago.

**LARGEST TEACHERS' AGENCY IN THE WEST**

## TEACHERS NEEDED DAILY FOR BEST SCHOOLS

DENVER, COLORADO

FISK TEACHERS AGENCY

M. E. SHUCK, Ph. D. 1919, Manager (Experienced Educator)

Boston, New York, Pittsburg, Birmingham, Portland, Berkeley, Los Angeles

## ALBERT TEACHERS' AGENCY

25 East Jackson  
Boulevard, CHICAGO

36th Year. You want the best service and highest salaried position. We are here with both. *The Outlook* for the teacher is interestingly told by an expert in our booklet, "Teaching as a Business." Send for it.

Other Offices: 437 Fifth Ave., New York; Symes Bldg., Denver, Colo.; Peyton Bldg., Spokane, Wash.

# INDEX TO ADVERTISEMENTS

	PAGE
<i>Band Saws</i>	
The Sidney Tool Co.....	xii
The Crescent Machine Co. .....	xxix
<i>Benches</i>	
Kewaunee Mfg. Co.....	xxvii
<i>Books</i>	
McGraw-Hill Book Co.....	xi
John Wiley & Sons.....	xxiii
The Manual Arts Press .....	xv, xxxvi
<i>Cabinet Hardware</i>	
Hammacher, Schlemmer & Co.....	xxviii
Thurston Manual Training Supply Co.....	xxv
<i>Chucks</i>	
Skinner Chuck Co.....	xiv
<i>Clamps</i>	
Adjustable Clamp Co.....	xxxiv
Batavia Clamp Co.....	xxvi
The Black Bros. Co.....	xxxiv
<i>Drawing Supplies</i>	
Frederick Post Co.....	xxix
Keuffel & Esser Co.....	xxvii
<i>Drawing Instruments</i>	
Keuffel & Esser Co.....	xxvii
Frederick Post Co.....	xxix
National Instrument Co. .....	xxiv
U. S. Blue Print Paper Co. .....	xxviii
<i>Forges</i>	
B. F. Sturtevant Co.....	ix
Buffalo Forge Co.....	xxiv
<i>Furniture Designs</i>	
Choraleon Phonograph Co. .....	xxii
<i>Hammers</i>	
Vaughan & Bushnell Mfg. Co.....	xxiv
The David Maydole Ham- mer Co.....	xxix
<i>Inlays</i>	
J. Bernard Co.....	xxiv
<i>Jointers</i>	
J. A. Fay & Egan Co. .....	2nd Cover
Oliver Machinery Co.....	v
<i>Laboratory Furniture</i>	
The Kewaunee Mfg. Co. .....	xxvii

	PAGE
<i>Lathes</i>	
The Monarch Machine Tool Co.....	xvi
South Bend Lathe Works .....	3rd Cover
American Wood Working Machinery Co. 4th Cover	
The Standard Lathe Works .....	xxi
American Saw Mill Ma- chinery Co.....	xxxvi
<i>Lumber</i>	
Frank R. Porter.....	xix
Maisey and Dion.....	xxvi
Industrial Book and Equip- ment Co.....	xxvii
Pacific Lumber Co.....	xxii
<i>Metalworking Tools</i>	
The L. S. Starrett Co.....	xiii
North Bros. Mfg. Co.....	xvii
Vaughan & Bushnell Mfg. Co.....	xxiv
Hammacher, Schlemmer & Co.....	xx
<i>Milling Machines</i>	
John Steptoe Co.....	xxi
<i>Pencils</i>	
Joseph Dixon Crucible Co. .....	xxv
American Lead Pencil Co. .....	xxxiv
<i>Phonographs</i>	
Choraleon Phonograph Co. .....	xxii
<i>Planes</i>	
The Stanley Rule & Level Plant.....	xviii
<i>Planers</i>	
J. A. Fay & Egan Co. .....	2nd Cover
Oliver Machinery Co.....	v
<i>Printing Outfits</i>	
Barnhart Bros. & Spindler .....	xxi
<i>Rules</i>	
Lufkin Rule Co.....	xxix
<i>Sawing Machinery</i>	
Oliver Machinery Co.....	v
Alexander Dodds Co.....	xxvii
The Crescent Machine Co. .....	xxix
The Tannewitz Works.....	xx
<i>Saws</i>	
Henry Disston & Son.....	ii
Simonds Manufacturing Co. .....	xxiii

	PAGE
<i>Shapers</i>	
John Steptoe Co.....	xxi
<i>Sheet-Metal Tools</i>	
Niagara Machine & Tool Works.....	xxviii
<i>Teacher's Agencies</i>	
Specialists' Educational Bureau.....	xxxii
The Acme Teacher's Agency .....	xxxii
Northwestern Teachers' Agency.....	xxxii
Oswego Teachers' Agency .....	xxxii
Albert Teachers' Agency .....	xxxii
Rocky Mountain Teachers' Agency.....	xxxii
Fisk Teachers' Agency.....	xxxii
The Minneapolis Teacher's Agency.....	xxxii
National Educational Agency.....	xxxii
<i>Tool Grinders</i>	
Mummert-Dixon Co.....	xxviii
<i>Type</i>	
American Type Founders Co.....	vii
<i>Upholstery</i>	
Thurston Manual Training Supply Co.....	xxv
<i>Wood Finishes</i>	
S. C. Johnson & Son.....	i
<i>Woodworking Machinery</i>	
J. A. Fay & Egan Co. .....	2nd Cover
West Side Iron Works.....	xix
The Sidney Tool Co.....	xii
The Tannewitz Works.....	xx
Oliver Machinery Co.....	v
Alexander Dodds Co.....	xxvii
The Crescent Machine Co. .....	xxix
American Wood Working Machinery Co. 4th Cover	
American Saw Mill Ma- chinery Co.....	xxxvi
<i>Woodworking Tools</i>	
Henry Disston & Sons.....	ii
The L. S. Starrett Co.....	xiii
North Bros. Mfg. Co.....	xvii
Vaughan & Bushnell Mfg. Co.....	xxiv
The Stanley Rule & Level Plant.....	xviii
Hammacher, Schlemmer & Co.....	xx
Montgomery & Co., Inc. .....	xxvi





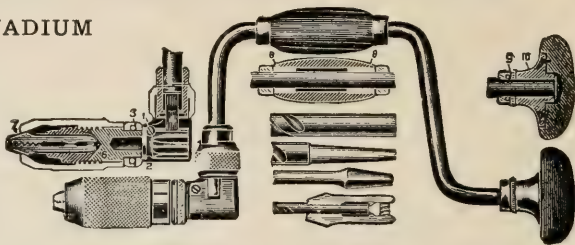
# Vaughan's Supersteel Braces

MADE OF VANADIUM

In vocational and industrial art training concentration upon quality of tools is important. V & B Tools are made of the best alloy obtainable, insuring high quality.

**Vaughan & Bushnell Mfg. Co.**

2114-2138 Carroll Ave. Chicago Vaughan's No. 222 Brace, 8, 10, 12, 14 inch sweeps.



## CABINET CLAMPS



Where Black Bros. Clamps are known there is no Second Choice.

**KNOW THEM**  
Send for bulletin today.

**THE BLACK BROS. CO.**  
Mendota, Ill.

## "JORGENSEN"

### Hand Screws

Withstand the abuse of inexperienced hands

Steel Spindles  
Steel Nuts  
Hard Maple Jaws

**Adjustable  
Clamp Co.**

216 N. Jefferson St., Chicago



## VENUS PENCILS

*The largest selling Quality pencil in the world*



For high lights and deep shadows, for quick or detail sketching, for smoothness and accuracy, the famous VENUS

pencils are unexcelled.

17 black degrees, 3 copying

For bold heavy lines  
6B-5B-4B-3B

For general writing and sketching  
2B-B-HB-F-H

For clean fine lines  
2H-3H-4H-5H-6H

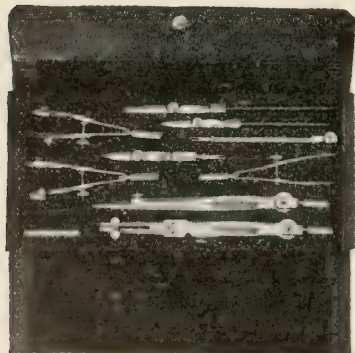
For delicate thin lines  
7H-8H-9H

Plain Ends, per doz., \$1.00  
Rubber Ends, per doz., 1.20

*At stationers and Stores throughout the world.*

**American Lead Pencil Co.**

219 Fifth Ave., (Dept. A.,) N. Y.  
also London, Eng.



## MECHANICAL DRAWING INSTRUMENTS

At Special Wholesale Prices

**Complete Outfits at \$3.50 and up**

Construction of solid nickel silver and steel.  
Pocket cases lined with Velvet.

*Our offer is limited.*

Write for catalogue and prices—TO-DAY.

**National Instrument Company**

4517 North Lawndale Ave., Dept. M., Chicago, Ill., U. S. A.



## BOOK NOTES

THE author of *Elementary Machine Shop Practice*, T. J. Palmateer of Stanford University, has made some forceful statements concerning the use of his book. First he points out that his book differs from the ordinary machine shop handbook in that it may be used by the student as a guide while at work, and not merely as an occasional reference book. In this book specific information is given for each problem, so that students may apply the information directly on the work. In case it is considered advisable to devote less time to elementary operations than would be necessary to complete all the problems in the book, very good results can be obtained if the student will read all of the instructions carefully and work only such problems as the instructor considers necessary.

Then he says that as a result of actual experience the following results have been noted:

(1) Students do better work, learn more, and complete the problems in a shorter period of time than they did before using the book.

(2) The information and the instructions are much clearer than when given offhand in the shop.

(3) The instructor need not answer the same question several times.

(4) Students do not have to depend entirely upon the instructor, which is advantageous because it often happens that a number of beginners need help at the same time. If they are working on different things the instructor's attention is usually limited to one at a time. This means that someone must wait, or else plod along as best he can and perhaps spoil his work. With the instruction book the necessary information can be readily obtained. This develops initiative, eliminates idleness, and promotes efficiency and discipline.

(5) A textbook of this type serves to standardize the course. Elementary shopwork should be standardized, within certain limits, so that after a student has taken a certain number of hours in one school he will have completed a certain kind of work that will be equivalent to like work in other schools. At the present time there are almost as many different standards for the elementary course as there are schools.

(6) It helps in training students to read and understand technical English.

(7) Less money is required for equipment, as students complete the work in a shorter period of time. The main trouble with most shop courses is that teachers have to depend almost entirely on the oral method of instruction. If the elementary schools were conducted in the same manner, ten

or twelve years would be required to get thru the eight grades.

(8) The instructor is able to handle a large number of students efficiently.

A PROFESSOR of industrial education in one of our large universities says of *Elementary Machine Shop Practice* by Palmateer,

"It should reduce greatly the necessity for re-explaining the processes which consumes so much time in many school shops."

It was the discovery of this method of saving time in the teaching process that caused Mr. Palmateer to write the book. He found that he could accomplish much more with his classes in a given time with the book than without it.

WE HAVE recently learned that *Progressive Steps in Architectural Drawing* by Seaman has been added to the approved list of reference and textbooks used in the high schools of Boston, Mass. This action is quite in harmony with the following statement from Otis F. Johnson, architectural engineer, Trenton, N. J., who writes,

"I have used Mr. Seaman's book in my class work in the School of Industrial Arts, and find it a great benefit in explaining the fundamental principles in house planning. As a builder I am recommending the book to all my men who are desirous of making themselves more efficient.

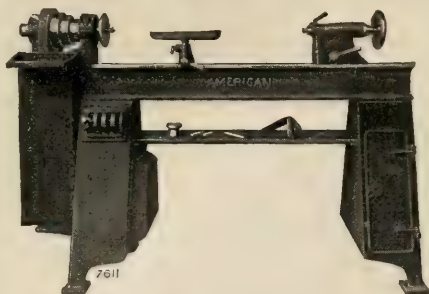
"After years of experience both as an instructor and a builder I consider Mr. Seaman's book the best primary work of this kind ever published."

IT IS not too much to say that *Mechanical Drawing Problems* by Berg and Kronquist easily holds the lead among books of problems in mechanical drawing. It covers a large variety of subjects, offers a wide range of choice, encourages a sound method of teaching, and, without pretending to be a complete textbook on the subject, it does give just the right amount of text material to properly supplement the teacher's instruction. One review writer has said of it: "This book appeals to us as the most practical and teachable book on drafting that has been offered up to the present time for use in high schools."

*Wood-Block Printing* is the title of an English book by F. Morley Fletcher, director of the Edinburgh College of Art, which has just been received. It is published by Isaac Pitman & Sons, London. This book is a description of the craft of woodcutting and color printing based on the practice of the Japanese.



# AMERICAN



## Manual Training Lathes

24", 36", 42" and 48" centers.

With motor in base—4-speed changes—handy shifter. Also furnished with countershaft.

Band Saws, Planers, Jointers, Saw Benches, Variety Woodworkers

All high class machines at moderate Prices.

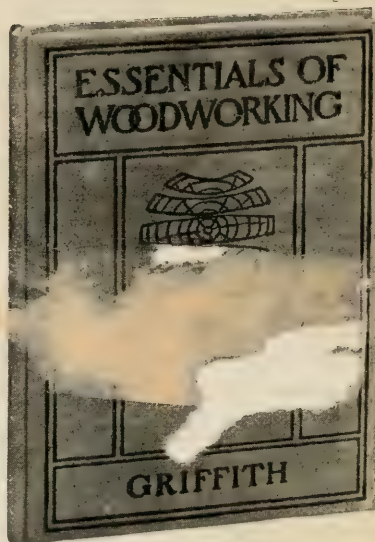
**AMERICAN SAW MILL MACHINERY CO.**

142 Main St., Hackettstown, N. J.

# Essentials OF Woodworking

By IRA GRIFFITH  
Professor of Industrial Education  
University of Wisconsin

THE STANDARD TEXTBOOK ON  
WOODWORKING



FOR HIGH SCHOOLS  
FOR UPPER GRADES  
TECHNICALLY CORRECT  
PEDAGOGICALLY SOUND  
PROPERLY ORGANIZED  
WELL BALANCED  
SIMPLE LANGUAGE  
CLEAR AND DEFINITE  
WELL ILLUSTRATED

Unlike most textbooks on woodworking, this book is not written about a course of projects but may be used with any course and in any order that the teacher desires. It contains the fundamental facts and principles which should be covered in every elementary course in woodworking. Its use as a text results in better organization, definite instruction, improved quality and increased quantity of work done.

ADOPTED FOR STUDENTS' USE IN  
LARGE AND SMALL SCHOOL SYSTEMS  
IN ALL PARTS OF THE UNITED STATES

Price, postpaid, \$1.44.

ESS  
NOIS

## A LETTERING CARD

— AND —

## LETTERING SHEET

**FREE**



¶ A card of alphabets showing Gothic capitals and small letters both vertical and slant. Printed on bristol, size, 4" x 8". Arranged by E. S. Maclin.

¶ Lettering sheets. One for vertical and one for slant letters with special ruling on good paper.

¶ Send the coupon today.

The Manual Arts Press, Peoria, Illinois.

Please send a free copy of "Lettering Card" by Maclin and Lettering Sheets.

Name.....

Position.....

St. & No.....

City & State.....





